L250
Ethernet Virtual Desktop
with vSpace Server

User Manual

Important Notices

Please note that reproduction of this User Manual in whole or in part, without express written permission from NComputing, is not permitted.

NComputing reserves the right to make improvements and/or changes to this User Manual and to the products, programs and/or specifications described herein at any time without notice. Information contained in this document may have been obtained from internal testing or from a third party. NComputing shall not be liable for any direct, indirect, special, incidental or consequential damages in connection with the use of this material. The latest version of this User Manual can be downloaded from the "Documentation" page in the Support section of the NComputing website at: www.ncomputing.com

Refer to the Limited Hardware Warranty applicable to your region for information on what is and what is not covered by the warranty, your responsibilities, exclusions, and how to obtain service. It is your responsibility to download a copy of the warranty at the time of purchase to keep for your records. The warranty can be downloaded from the "Documentation" page in the Support section of the NComputing website.

Please refer to the End User License Agreement (EULA) and Terms of Use (TOU) that are presented for your review during the software installation process. The information contained in these documents is very important. The EULA and TOU constitute agreements between you and NComputing and are accepted by you by installing and using the product. It is your responsibility to print a copy of the EULA and TOU directly from the installer in order to keep for your records.

This product gives users shared access to computer resources. It is not a computer, and may not support all software applications, especially high-resolution graphics applications or 3D games that are designed to be supported by stand-alone computers. Similarly, it may not support all hardware peripherals that are designed to be supported by stand-alone computers.

Refer to your computer operating system and application software vendors' license agreements for information on using these products with NComputing systems. Additional software licenses may be required.

Microsoft® Windows® Licenses. You are licensed by NComputing to use the vSpace Server software under the terms of the EULA. You must also acquire the appropriate number of Windows Server licenses and Client Access Licenses for each device or user accessing Windows Server software. You cannot use the vSpace Server software with Windows Client software (i.e., Windows Vista, Windows 7) unless a single user and no other user accesses the same Windows Client software at any one time, or you are authorized to do so under an applicable license from Microsoft or as expressly set forth in the "Microsoft Windows Server to Windows XP License Rights" section of the NComputing EULA. In all cases, your rights and obligations with respect to the use of vSpace Server software with Windows Server software and Windows Client software are defined by both the NComputing vSpace Server software EULA and the applicable Microsoft Software License Agreement or EULA. For more information on licensing with Microsoft operating systems see: www.ncomputing.com/mslicensing
For single user applications of your L-series product such as remote control, digital signage and 1:1 VDI refer to the same web page for information on client operating systems currently supported.

The NComputing hardware and software products described in this user manual are protected by numerous granted and pending U.S. and international patents. Some components of NComputing products utilize open-source software. Please refer to the GPL Declarations section of this User Manual for more information.

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Safety Information

Refer to the following to prevent any physical injury or loss of assets caused by damage to the product.

A user must read this User Manual carefully before use and properly follow the instructions.

- Make sure that the place of installation is not too hot (above 35˚C), too cold (below 0˚C), or too wet (above 85% relative humidity).
- Avoid any severe impacts to the product
- Make sure that the product is not exposed to direct sunlight or any hot machinery.
- Please keep the product away from any items which have strong magnetic properties.
- Do not disassemble, repair or rebuild the product.
- Please properly route all cables and power cords to avoid a tripping hazard. An electric shock, fire, damage to the product or physical injury may occur as a result of tripping over the cable.

Regulatory Compliance

FCC Information

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment to a power outlet on a circuit different from which the receiver is connected
- Consult your dealer or an experienced radio TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For enhancing performance and reliability, we recommend using an FTP or STP cable between the L250 and the client devices.

전자파적합등록 (EMC Registration)

NCC-L250 (B)

- □□□ □□(□□□)：Network virtual desktop (L250)
- □□ □□ : NCC-L250 (B)
- □□ □□ □□ □□ : □□□□ □□□□
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European Community:

CE

Disposal Information:

This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. The separate recycling of your product will help ensure that it is recycled in a manner that protects human health and the environment.

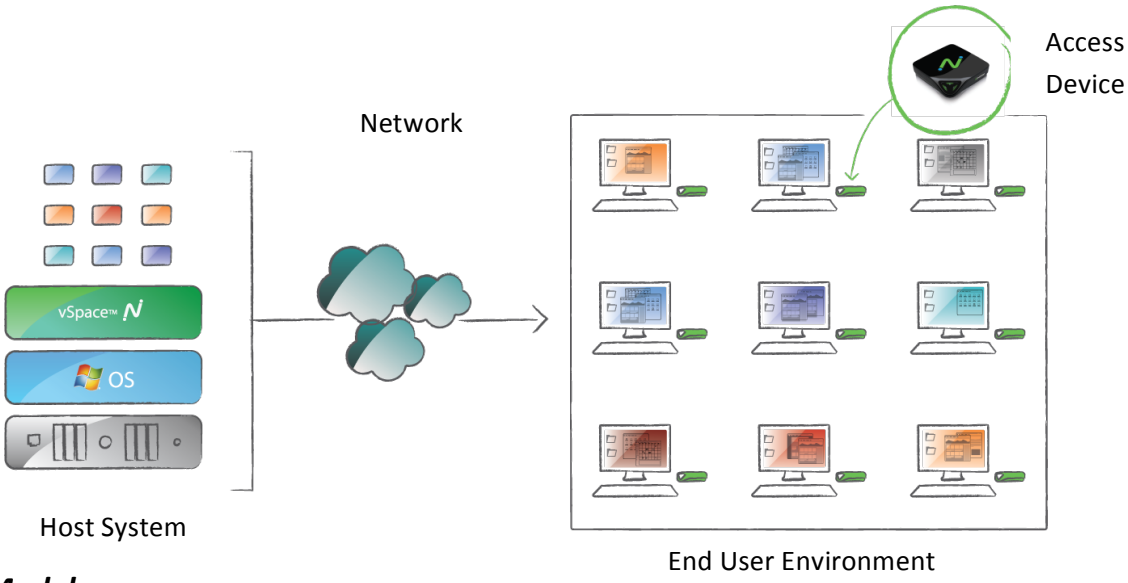
GPL Declarations

The NComputing L250 access device contains – in part – some free software (software licensed in a way that ensures your freedom to run, copy, distribute, study, change and improve the software). This free software is also contained in the L250 firmware update files that are distributed together with NComputing vSpace Server software installation packages that are expressly for the L250. The free software contained within the L250 firmware includes a version of X-LOADER, U-BOOT, LINUX, LIBSYSFS, LIBUCI, LIBUSBIP, ETHTOOL, UCLIBC, QT and BUSYBOX.

Further, for at least three (3) years from the date of distribution of the applicable product or software, we will give to anyone who contacts us at gplcoderequest@ncomputing.com, for a charge of no more than our cost of physically performing source code distribution, a machine-readable copy of the complete corresponding source code for the version of the software that we distributed to you. For additional information refer to this page on the NComputing website: www.ncomputing.com/gplcodedownload

Product Overview

The NComputing L-series access devices with vSpace® desktop virtualization software dramatically cut your computing costs by enabling multiple users to share a single PC, server or virtual machine. Each user gets their own virtual desktop with a rich, multimedia computing experience that is practically indistinguishable from running on a full PC. Best of all, IT staff and end users do not need special training because this end-to-end solution is easy to manage and is compatible with standard desktop applications.



L250 Model

The L series delivers the best possible virtual desktop experience with the addition of a high-performance video acceleration system that supports full screen motion video, higher screen resolutions and more USB ports. The L-series is available in two distinct versions; L250 and L300. This manual covers the L250 on Windows operating systems (refer to the NComputing online Knowledge Base at www.ncomputing.com/support and search on "OS Support," for specific Windows operating systems supported). For documentation on available Linux operating system support – refer to the Knowledge Base (search on "L-series Linux"). The following table summarizes the key features of L250.

	L250
Maximum Screen Resolution (Wide)	1400x900
Maximum Screen Resolution (Standard 4:3)	1280x1024
Maximum Color Depth	24-bit
Mouse & Keyboard Ports	USB
Speaker Port	Yes
Microphone Port	Yes
USB Peripheral Ports	1 x USB
Acceleration for full-screen video support	Yes

Host Setup

System Requirements

Starting with vSpace 6.5, the maximum number of L-Series users is increased to 100. However the number of users, intended application suite and overall performance expectation will ultimately determine how powerful a computer must be used in order to deliver the desired multi-user experience. The tables below give recommended specifications for a vSpace host computer running a typical application set, based on the number of users and type of access device. NComputing recommends you always test your environment in advance of deployment to ensure it meets your expectations.

Recommended Host Hardware Configuration						
Host Configurations	Number of Users[1]					
	1-10	10-20	20-30	30-50	50-75	75-100
CPU* (minimum or equivalent)	Intel™ Core 2 Quad	Intel Core™ i7	Intel Core i7	Intel Core i7	Dual Xeon™	Dual Xeon
Memory (32-bit OS)	4 GB	4 GB	4 GB	NA[2]	NA[2]	NA[2]
Memory (64-bit OS)	6 GB	8 GB	12 GB	16 GB	24 GB	24 GB

[1] The number of users that your installation will support depends upon the host's configuration and your end-users' performance expectations. Performance results are highly dependent upon the individual host hardware, memory, applications being used, OS and network conditions within any LAN. *Host requirements will vary, please test your multi-user environment before deployment.*

[2] 32-bit operating systems are not supported with this number of users.

For additional sizing guidelines refer to the following Knowledge Base articles:

- *Scaling vSpace Deployments*
- *Deployment Checklist*.

For Microsoft OS licensing information see the paragraph on page 3 and www.ncomputing.com/mslicensing

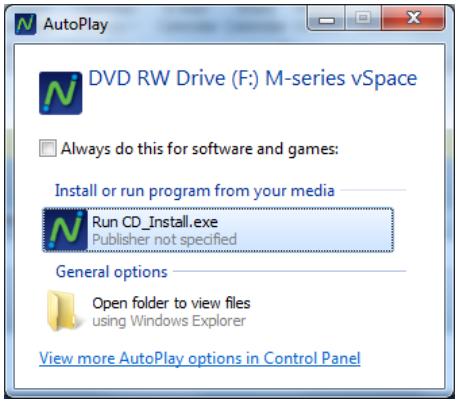
For each L-series device you will need:

- Keyboard and mouse (USB)
- Monitor
- A category 5/6 network cable to connect to your existing Ethernet network
- Optional: speakers, headphones, microphones and USB peripherals

vSpace Server software installation

Per the instructions below, always check the NComputing website for the latest vSpace Server software. The software on the CD in your package may not be the latest version.

- Insert the software installation CD into the host computer's CD drive. In most cases, a window will automatically appear after a few seconds with installation options. If the Windows “AutoPlay” dialog appears (as seen below), select “Run CD_Install.exe”. If neither appears, go to "My Computer," open the CD drive's icon, and start the "Setup" application.



- At the initial setup screen, click the "Download Latest Software" button. This will launch a browser window at the NComputing Software Download Center. Locate the correct software based on product model and operating system, and download the corresponding “zip” folder.
- Note that the current version of vSpace Server is always located at www.ncomputing.com/downloads
- If internet access is unavailable, click “Browse CD” to locate the installer file per the next step
- After downloading and extracting the installer files, or alternately locating them on the product CD, run the vSpace Server Installer by launching *.MSI installer for a first time installation. If you are updating an existing vSpace Server installation, refer to the Release Notes for specific install instructions.
- At the installer’s "Welcome" screen, click on the "Next" button which will take you to the antivirus and firewall warning screen. Read and follow the instructions, then click on the "Next" button.

Note: When dealing with certain firewall applications, you may need to make sure that the NComputing .exe files have proper access permission to the network. These .exe files include:

KMSERVC.EXE, BOOTSRV.EXE, KMMSG.EXE, KMUPDATE.EXE, KMREGWIZ.EXE

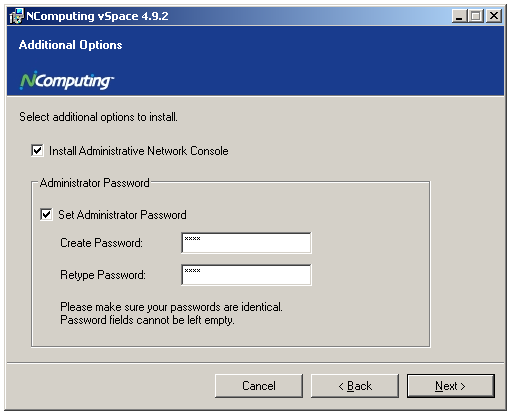
Within the Exceptions tab of the Windows Firewall the ports that should be opened are:

TCP-Protocol: 27605, 27615, 3581, 3597, 3645, 3646, 3725

UDP-Protocol: 1027, 1283, 3581, 3725

Please see our Knowledge Base at http://www.ncomputing.com/support for more details.

- At the software End User License Agreement and Terms of Use screens, read the agreements and if you agree, click on the "I agree" checkbox, and then click on the "Next" button.



- At the final “Confirm Installation” screen, click “Install” to begin the software installation and then follow the additional prompts. This process may take up to 5 minutes to complete, and it is normal for the system to beep frequently. The installer may appear to stop, but if the mouse

cursor regularly switches between the pointer and the hourglass, everything should be proceeding normally. If the installer takes longer than 15 minutes to complete, please contact NComputing technical support for assistance.

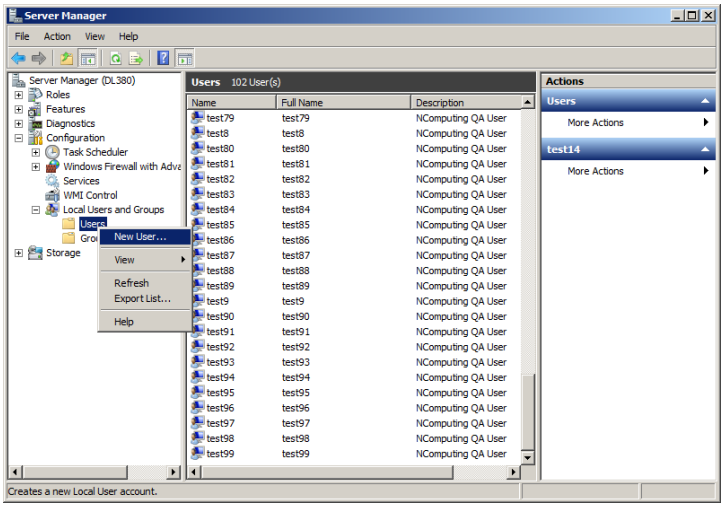
- At the "vSpace Server successfully installed" screen, click “Close” to end the installer, and select whether or not to immediately restart the computer (a restart is required before vSpace Server can be used).
- Proceed to the following sections to connect your L-series devices, register and activate the software and devices and update the device firmware (as needed).

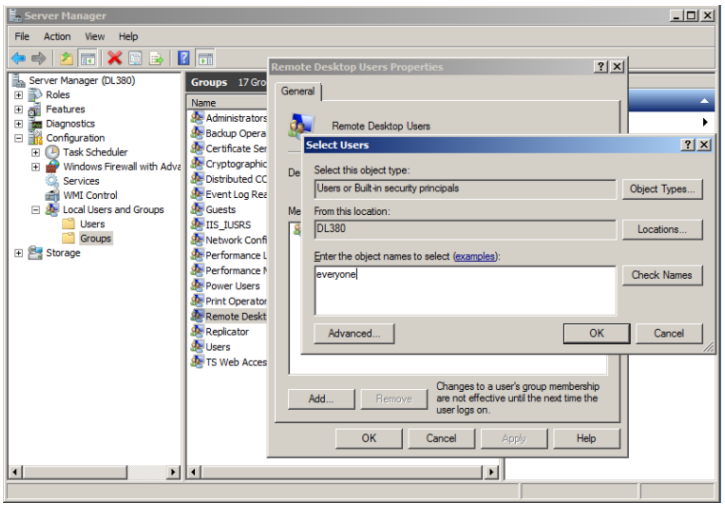
User Account Creation

The L250 can access a Windows session using either local or domain user accounts. The optimal type of user account will vary depending on the type of environment the vSpace host is being deployed into. You can use existing accounts or, if preferred, create new user accounts specifically for the terminals.

To create new local user accounts and add them to the Remote Desktop Users Group:

1. From the host Windows session, click “Start” then Right Click on “Computer” and click “Manage” from the dropdown menu.
2. From within the Server Manager menu select “Configuration” then “Local Users and Groups” in the left navigation tree.
3. Right Click on “Users” and select “New User…” to create as many new users as needed.





4. Select “Groups” from the left navigation tree and double click on “Remote Desktop Users”. Click “Add” and then enter either the user names you’ve recently created, or simply enter “everyone”.

If you are installing a host into a domain environment which uses domain user accounts, contact your local system or network administrator to have them create any additional user accounts that you may need.

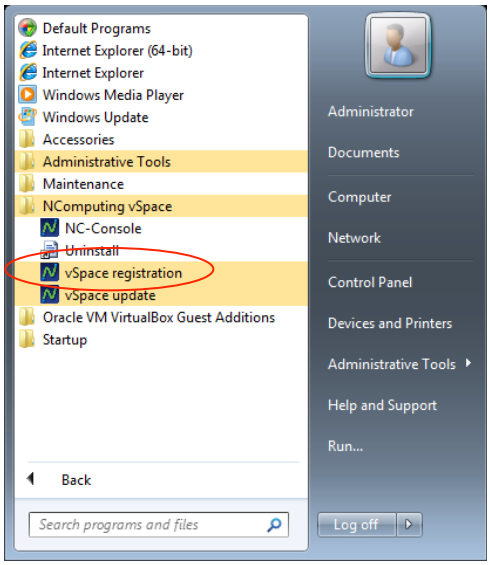
Product Registration

Important!

DEVICE AND VSPACE SERVER SOFTWARE REGISTRATION ARE REQUIRED TO RECEIVE VSPACE UPDATES AND TECHNICAL SUPPORT.

Product registration is required for all L-series devices and vSpace Server software to enable normal product use, downloading updates, and technical support. When registering the software, all the access devices must be connected to the host system using Ethernet.

Select "vSpace Server Registration" in the Windows Start menu as seen below:



vSpace Server 6 on Server 2008 R2

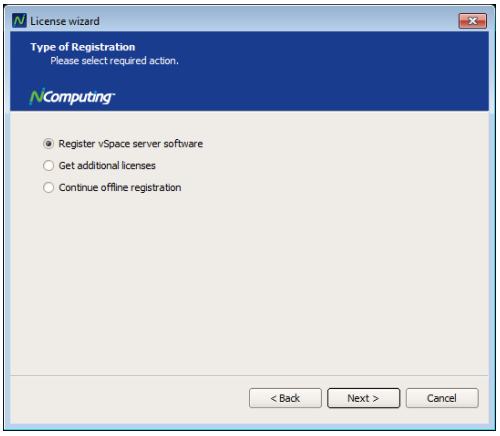
- At the registration program “welcome” screen, if vSpace Server password protection is turned on, you will need to enter your password. Then click the "Next" button.

- Next, you are presented with the vSpace Server End User License Agreement (EULA). If you agree, click in the “I agree” check box, and then click the “Next” button.

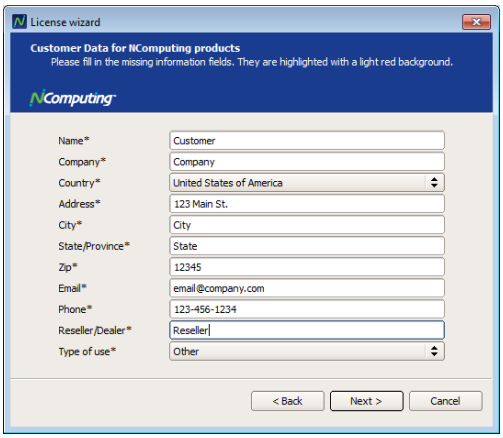
Online Registration

In the case of Online Registration, follow the instructions below. Otherwise skip to the section titled “Offline Registration.” Online registration will be completed automatically if possible during software installation. If your host system is unable to access the internet

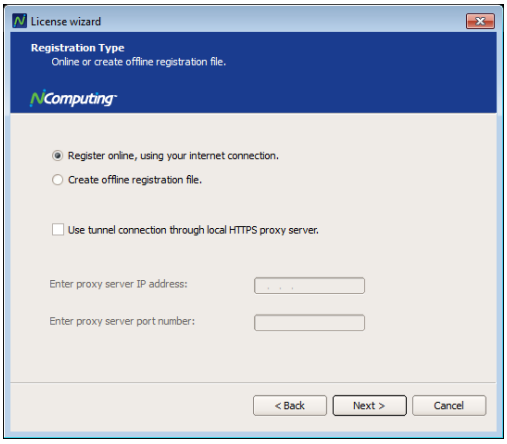
- If you want to register your software and L-series access devices online, leave the “Register vSpace Server software” radio button selected, and click “Next.”



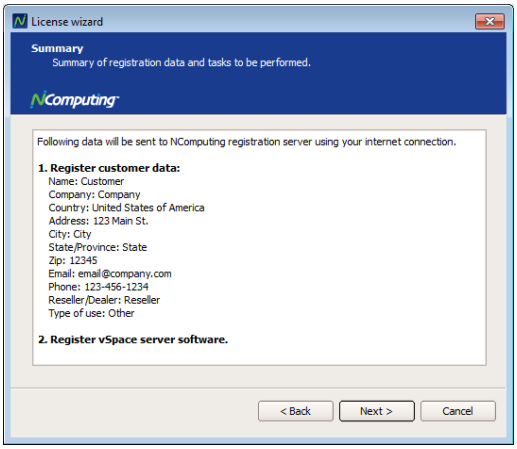
- At the "Customer Data" screen, if the data fields are not already populated with the information entered during product installation, enter the registered user's relevant information. Each field in this window must be filled in. Once you have entered all the data, click on the "Next" button and proceed through the additional screens that show you which devices are connected and the current registration status (vSpace Server 6).


License wizard
Customer Data for NComputing products
Please fill in the missing information fields. They are highlighted with a light red background.
NComputing
Name*
Customer
Company*
Company
Country*
United States of America
Address*
123 Main St.
City*
City
State/Province*
State
Zip*
12345
Email*
email@company.com
Phone*
123-456-1234
Reseller/Dealer*
Reseller
Type of use*
Other
< Back
Next >
Cancel

- On the Registration Type screen, select “Register online, using your Internet connection” and click “Next.” Note: If you use a Proxy Server for internet connectivity, enter the Proxy connection data here.

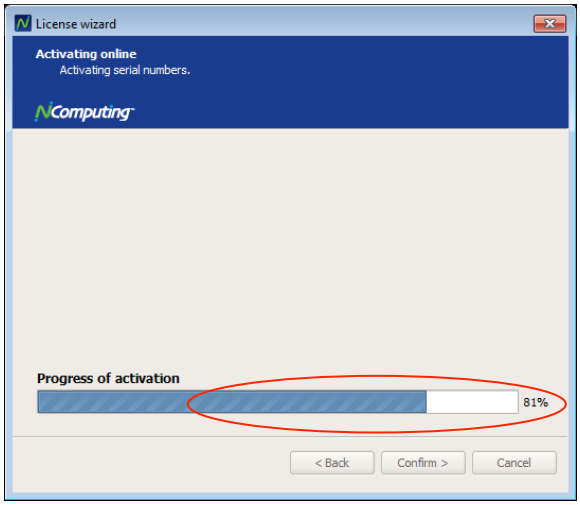


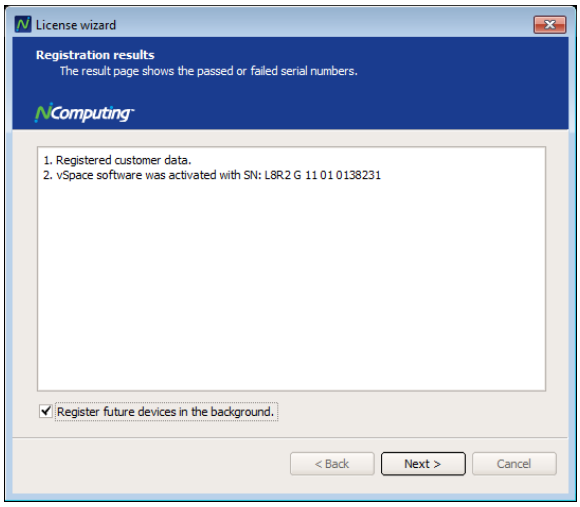
- The registration wizard will then show you a list of all unregistered L-series access devices that are currently connected to this vSpace Server host that can now be registered.
- Before the registration wizard communicates with the registration server, you will see a “Summary” screen showing all user information that will be registered with the vSpace Server software. Also, any connected but unregistered L-series access devices will be listed for registration. If all the information is correct, click the “Register” button to initiate the registration or click “Back” if you wish to change any of the information.



- You will see a screen showing the progress of the registration and when your registration is complete, you will see the “Registration results” screen. Be sure to click the check box for the “Register future L-series devices in the background” option if you want vSpace Server to automatically register any unregistered L-series access devices

that connect to this system in the future. Use of this “background registration” feature requires standard Internet connectivity.

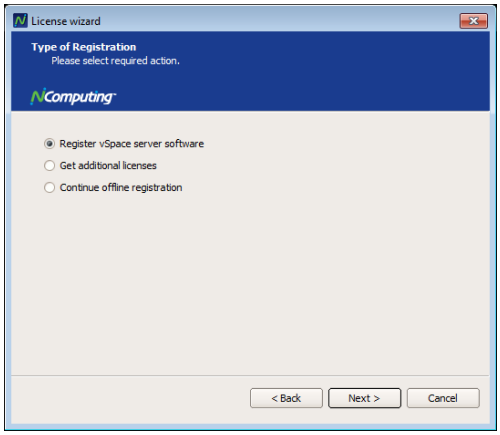




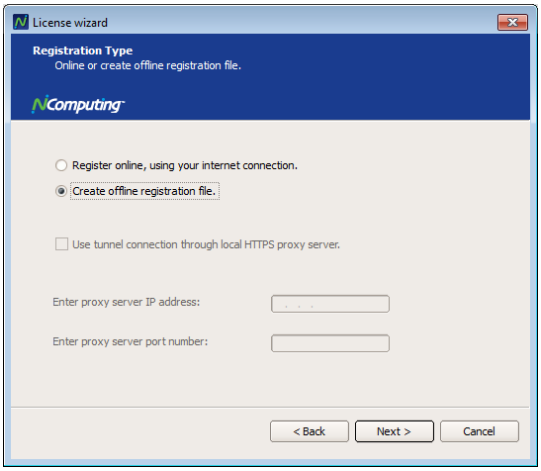
Offline Registration

In the case of Offline Registration, follow the instructions below. If you have completed the online registration section, skip to “Using the access device.”

- If you don’t have standard Internet connectivity, you can use standard email to register your vSpace Server software and L-series access devices.
- To use offline registration, select the “Register” option, and click “Next.”



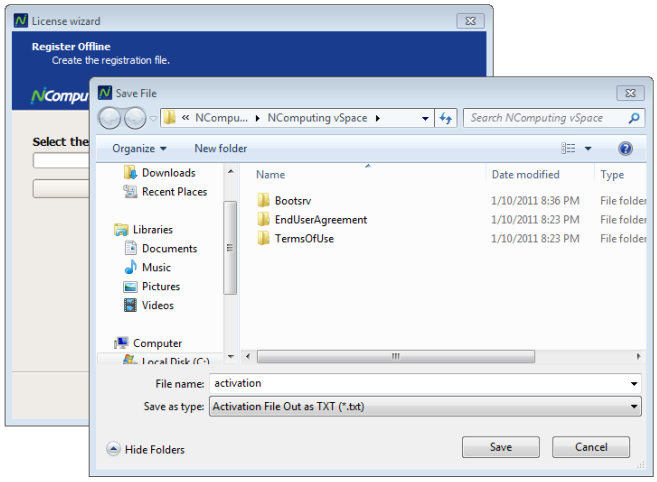
- At the "Customer Data" screen, if the data fields are not already populated, enter the registered user's relevant information. Each field in this window must be filled in. Once you’ve entered all the data, click the "Next" button.
- The registration wizard will then show you a list of all unregistered L-series access devices that are currently connected to this vSpace Server host and can now be registered.
- On the next screen you then select the “Create off line registration file” option and click “Next.”



- You’ll need to select the location where you wish to store the registration data file that you’ll later email to NComputing. Note that you cannot type directly into the “Create activation file”

field, but you must click on the “Select” button to navigate to the directory where you wish to store the offline registration data file.

- The window below shows the navigation screen that allows you to place the data file in the desired location. Feel free to change the “File name” to something other than “activation” – but don’t change the “Save as type” field. The registration file must be of type “txt” – even though the data inside is encrypted and must not be modified.

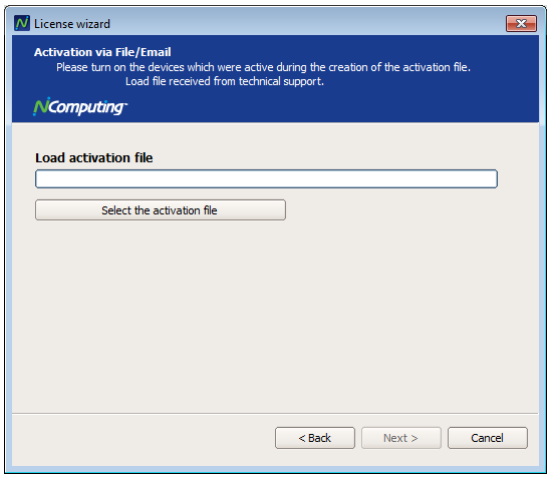


- Before the registration wizard writes the data file, you will get a “Summary” screen showing all user information that will be written to the data file. Also, any connected but unregistered L-series access devices will be listed for registration.
- If the information is correct, click the “Register” button or click “Back” if you wish to change any of the information.
- Next, email the created “txt” file to registration@ncomputing.com. Alternately, you can copy the “txt” file to another PC, if necessary, to send the email.

It should normally take only one or two minutes to receive the vSpace Server license file by returned email. If you do not see the file in your e-mail Inbox, be sure to check your email filter to ensure that the message was not flagged as Junk or SPAM mail.

When you receive the license file, save it in a convenient disk location, and restart the “Registration Wizard.”

Select the “Complete offline registration by using activation file” or “Continue offline registration” option and click “Next” and navigate to the disk directory where you have stored the returned license/activation file.



- Click “Select” or “Select the activation file” to navigate to the file, and click “Open” once you have located the correct license file. Then click “Next” to load the license file and apply it to the vSpace Server host system.
- After the offline file is loaded, you see the “Registration results” screen. Click the “Next” button to complete the offline registration process. Your devices are now registered and ready for continuous use.

Registration Reminder

If user data is not entered during the installation process, a reminder message will be displayed each time and administrator logs into the host. If user registration data is present but the registration process has not been completed, a reminder will be displayed each time the vSpace console is launched.

> **NOTE:** Devices that have not been registered may be limited in functionality. If you find that one or more of your devices are automatically resetting or logging out of their sessions on an hourly basis, run the registration process to ensure all devices have been properly activated.

Updating the vSpace Server Software

The latest NComputing software can be obtained from http://www.ncomputing.com/downloads You can check this location periodically for newly posted software. Simply download the installation file, read the release notes, uninstall your current version (if required per the Release Notes) making sure to keep your registration information active (when prompted), and install the new version of software.

Alternatively, you can update the vSpace Server software directly over the Internet by selecting "vSpace Server Update" from the Start menu.

> **Note:** If the "Enter Password" window appears, enter the vSpace Server administrator password you selected during vSpace Server installation.

Click the "Connect" button to check for a software update. If there is a new version available, click on the "Download" button to start the update process. If there is no new version available, click on the "Exit" button. When the download is complete, the installation of the new version will begin.

Uninstallation

To uninstall the vSpace Server software, select "Uninstall vSpace Server" under the "NComputing vSpace Server" folder in the Start menu (or select vSpace Server from the Add/Remove Programs utility in the Windows Control Panel). Follow the uninstall utility's prompts to remove the program components. After vSpace Server is uninstalled, you must restart the host computer to complete the removal process.

Windows Configuration Notes

The following are some initial Windows configuration notes to be aware of.

- **Windows 7* Installation:** You must have administrative rights to install vSpace Server 6 onto Windows 7*. However, unlike in Server 2008 R2, the actual "Administrator" account is not enabled by default in Windows 7. So, even though you may be logged-in as a Windows 7 user that's a member of the Administrators group, you still won't have sufficient "administrative rights" to install vSpace Server 6, and the MSI installer will generate an error message saying: "You need administrative rights to install this software. Installation Failed." You need to launch the "Administrative Command Prompt" by going to All Programs > Accessories > Command Prompt and then right-click and select "Run as administrator." Once the "Administrative Command Prompt" console pops up, launch the installer using the following command:

  - `msiexec /i install-filename.msi`

- **MSI Installer and Uninstaller Options:** The MSI installer for vSpace Server 6 has "ADDUSERS=0" available as a command line option to enable silent installs while suppressing the popup window asking if you want to add new users. An option is added to the uninstaller to provide options for handling an existing vSpace Server host license during a silent uninstall. The available options when running from the Command Line are:

  - "DELETELICENSE=0" – do NOT remove vSpace Server license
  - "DELETELICENSE=1" – popup box will appear
  - "DELETELICENSE=2" – remove vSpace Server license without popup

- **OS Settings:** The Windows Power Options setting should be configured to "High Performance" (under Control Panel > Hardware > Power options). Microsoft's default power settings give a false impression that vSpace Server CPU utilization is much higher than on previous 32-bit operating systems.

- **Windows 7 Desktop Theme:** If you install the Windows Server 2008 R2 "Desktop Experience" feature, start the "Themes" system service and set it to autostart, then each individual can "personalize" their virtual desktop to use a Windows 7- themed interface. However, remote sessions do not support the Aero "window transparency" feature for overlapping windows.

Client Access License (CAL) Installation

For multi-user applications, in addition to installing and activating the Windows Server operating system license on the host system, you need to acquire two types of client access licenses. First, standard Windows Server CALs for each user or device are needed. Second, you will also need to install Remote Desktop Services CALs (RDS-CALs) when running on Windows Server or Windows MultiPoint Server CALs (WMS-CALs) when running on Windows MultiPoint Server for each user or device accessing the system. For Windows Server operating systems, you will need to first add the Remote Desktop Licensing Server role (provided with the operating system) to at least one host in your environment.

After you install the licensing server on a particular host, you will use the Remote Desktop Licensing Manager application to activate the server and add RDS CALs. Other hosts in your environment can then point to this license server. For Windows MultiPoint Server, the licensing server component is pre-installed and you can simply use the MultiPoint Manager application to enter in your WMS CALs (instead of using the Remote Desktop Licensing Manager which does not accept WMS CALs). For further details on setting up the license server and installing CALs, please refer to your respective operating system documentation.

For More information on Windows licensing requirements, please visit

www.ncomputing.com/mslicensing

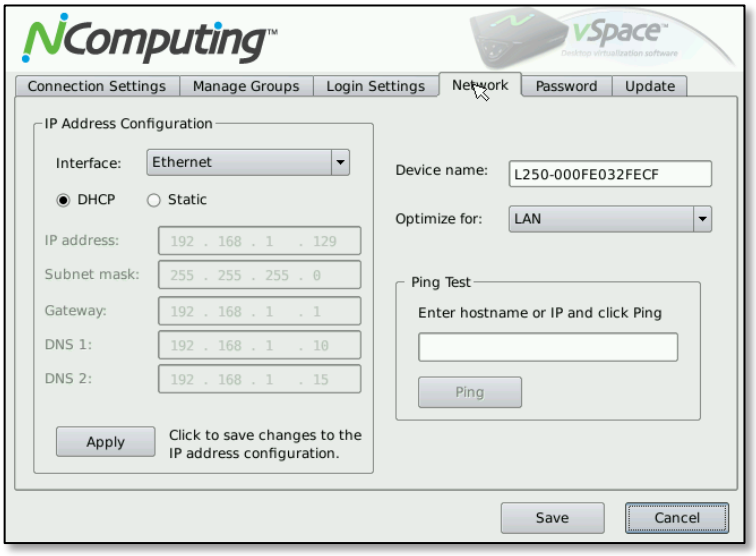
L250 Device Setup

The L250 must be connected to the host PC via an Ethernet switch, router, or other network connection. The L250 has USB ports dedicated for mice and keyboards, as indicated by the mouse and keyboard symbols below the horizontally oriented USB ports. The vertically oriented USB port to the left of the audio connections is for mass storage class USB devices and for USB printers. Keyboard, mouse, other HID devices and hubs are not supported on L250.

NOTE: The USB keyboard and mouse ports ONLY support these types of devices. No other types of USB devices are supported on these ports. The USB keyboard and USB mouse must be directly connected to these ports and cannot go through a separate USB hub. Peripherals with integrated USB hubs or combination keyboard/mouse devices are not supported by these ports. Mass storage and printers can be connected to the vertically oriented port that is to the left of the audio ports – note that these generic ports are not active until you have connected to a vSpace session.

Network connection

The L250 device can be configured to use DHCP-assigned network settings, or use static IP settings specified by the user. To use DHCP-assigned settings, power on the device, then go into the Device Setup, click the “Network” tab, and select the bullet labeled “DHCP.”



If static addressing configurations are used on the network, select “Static configuration” and supply the appropriate IP, Subnet Mask, Gateway, and DNS server (primary and alternate) information. Click “OK” to save changes and return to the main screen.

When your L250 device is connected to the network the “LNK” light (indicating Ethernet link) on the L250 front panel should be on and you should see that the Ethernet activity light, “ACT,” also blinks when there is active Ethernet traffic to/from the device.

Installation with monitor mount

The L250 device comes with a mounting plate and two mounting screws, which can be secured to a monitor via 75mm or 100mm VESA™-compliant mounting holes. The L250 device then attaches to the mounting plate, resulting in a zero-footprint workstation. In general, we recommend using the top two mounting holes on the monitor to give maximum cable access space.

Note: The L250 product also comes with a Kensington™ security lock interface, for additional theft protection.

L250 Firmware Update

It is always recommended to use the latest available version of firmware on your L250 device. Each installation of vSpace Server includes the latest firmware, so no additional downloads are necessary to complete this process. See the "Device Setup – The Update Tab" section of this manual for firmware update instructions.

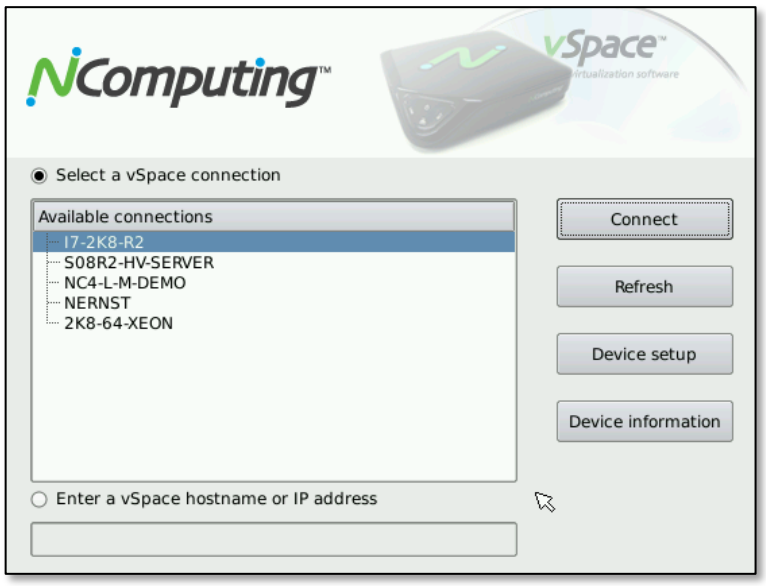
Important!

Please ensure that you have updated to the latest vSpace Server software and device firmware and registered your system before contacting technical support with a problem. Many common issues can be resolved with a simple update.

Using Your L250 Access Device

The “Server Selection” Screen

The “Server Selection” screen is the first to appear when the L250 device starts. From here, you can connect to a host, refresh the Available Connections list, view Device Information, or enter the Device Setup menu.



All available servers (running compatible versions of vSpace) on the device’s subnet will be displayed by default in the Available Connections list. You can also connect directly to a specific host by entering its hostname or IP address in the field at the bottom of the Server Selection screen, or enter the Device Setup menu to create groups of servers that the client can automatically connect to.

Device Information

The following information can be viewed from the Device Information screen:

- Device name
- Device ID
- Firmware version
- Serial number
- Interface
- IP address
- Subnet mask
- Gateway
- MAC address
- IP conflict
- Link detected

The "Device Setup" Screen

The Device Setup screen holds all of the device's configuration data, which is divided into the following categories:

- Connection Settings (default tab)
- Manage Groups
- Login Settings
- Network
- Password
- Update

When you are finished configuring device settings, you can click "OK" to save changes and exit the Setup screen, click "Apply" to save your changes and remain in the Setup screen, or click "Cancel" to exit the Setup screen *without* saving your changes.

Note: If changes have been saved with the "Apply" button, clicking "Cancel" will not undo them.

Device Setup - The “Connection Settings” Tab

The Connection Settings tab allows administrators to determine exactly how the client goes about looking for and connecting to available hosts. The client can be preset to connect to specific server groups or configured to search for avaliable hosts within its network.

A “vSpace Server server group” is a collection of one or more individual vSpace Server servers specified by a name that is currently defined from inside each L250 device’s setup interface.

If a server group contains only one name (or IP address), then the L250 attempts to connect to that server until successful or until the L250 is reset. If the server group contains more than one name (or IP address), the L250 tries to connect to the first server in the list, and if no successful connection is made, the L250 attempts to connect to the second server in the list (i.e., the device does an “auto failover” to the next server). If the L250 does not successfully connect to the second server in the list, the device attempts to connect to the third device in the list, etc. When the L250 reaches the end of the list, it starts again at the beginning of the “server group” and continues until a connection is made or until the L250 device is reset. (To allow for unusual requirements or server weighting algorithms, an individual server name or IP address may exist in multiple places in the list.)

Whenever an L250 disconnects from a session, autoconnect (if set) begins at the top of the connection cycle. The device does not keep track of the last server to which it successfully connected. Issuing a device reset command from the admin console will also cause the autoconnect processing to restart at the top of the cycle.

Device Setup - The “Manage Groups” Tab

The Manage Groups tab gives administrators more control over their device’s connection options. From this tab, they can add, modify and delete Groups of host systems by following the on-screen instructions.

The L250 adds the concept of a “server group” to the Autoconnect feature which in turn creates the auto failover feature. By autoconnecting to a group of servers, more flexible connection options are possible.

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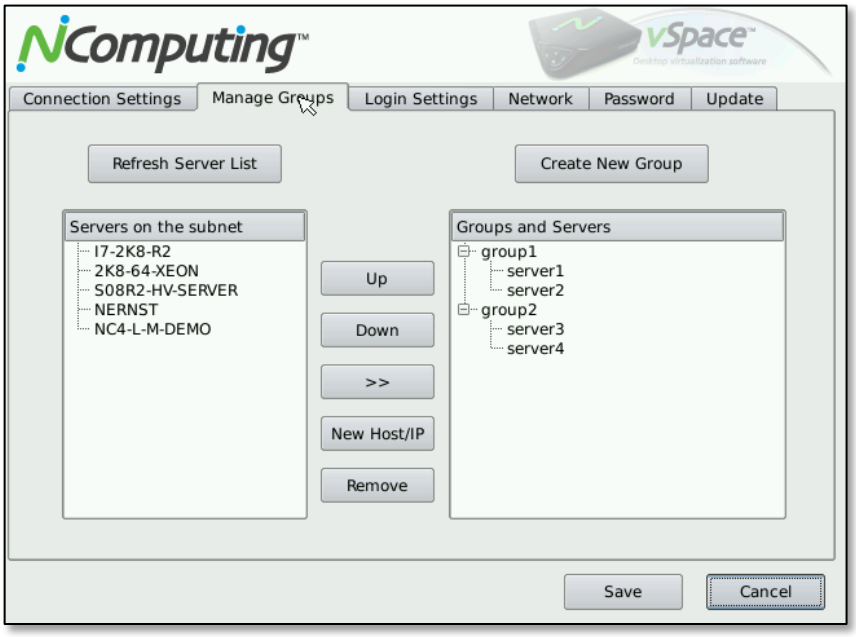


After a group has been created, the user may choose to modify the group to add hosts, remove hosts, or alter the Group Name. To accommodate flexible failover scenarios, a server is allowed to be a member of multiple groups, and can be included in the same connection group multiple times.

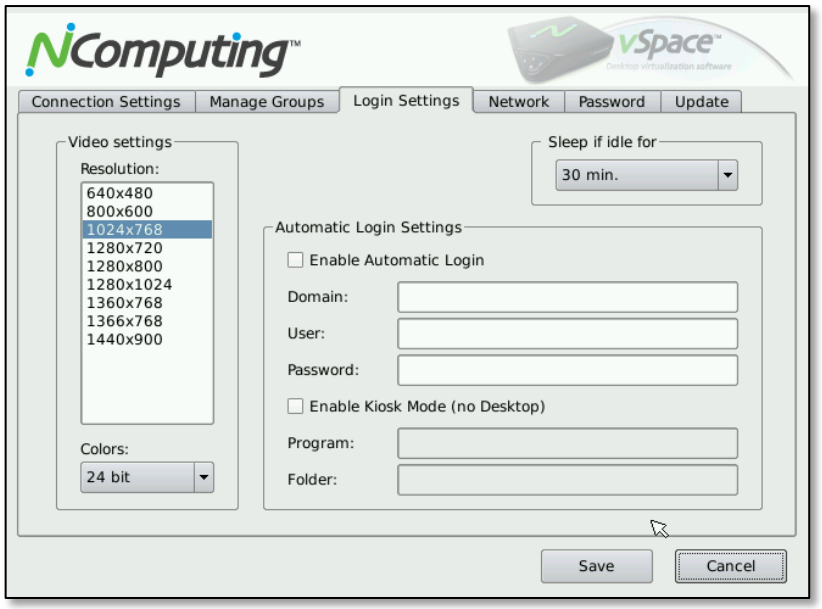
Device Setup - The “Login Settings” Tab

The Login Settings tab contains various device settings related to performance within Windows, including:

- Video Settings
  - **Resolution**
  - **Color Depth**
- Sleep if Idle
  (this setting operates within the device firmware to help prevent screen burn-in; within Windows, the standard Windows screen saver must be used).
- Automatic Login Settings
  - **Domain**
  - **User / Password**
  - **Program** (used for Kiosk mode)
  - **Folder** (used for Kiosk mode)

Kiosk Mode

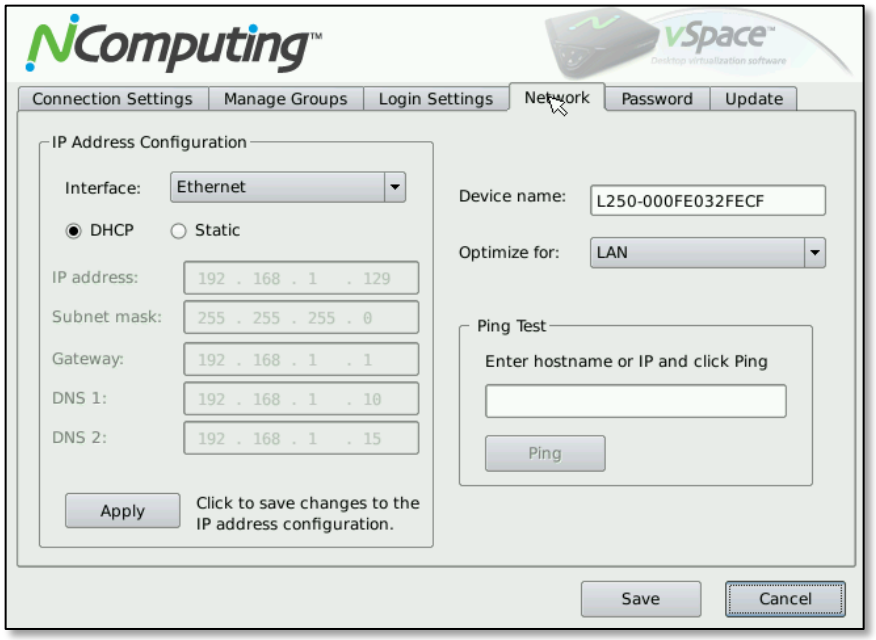
To launch an application instead of going to the desktop (also known as kiosk mode), enter the executable name in the “Program” field, and its drive/folder directory in the “Folder” field. For example, launching Internet Explorer on login would require “iexplore.exe” in the Program field and “C:\Program Files\Internet Explorer” in the Folder field.



Device Setup - The “Network” Tab

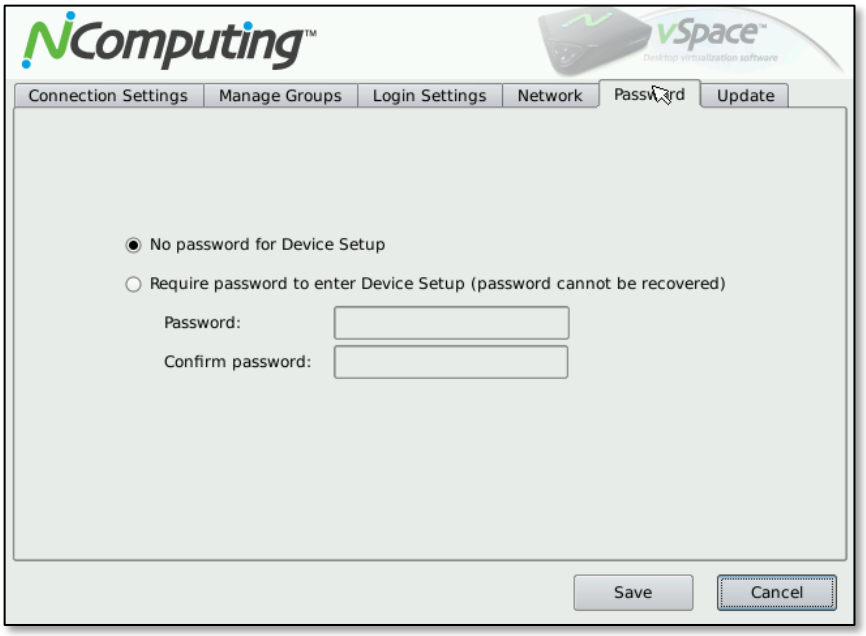
The Network tab contains the device’s network communication settings, as well as a Ping Test tool. The settings that can be configured are:

- Device Name
  Used to identify the device within the vSpace Server management console
- Optimize for
  Selects the type of network connection for optimize network traffic.
- IP Configuration
  Allows the administrator to configure the terminals network settings
  - **DHCP** (dynamically obtains settings from the network’s DHCP server)
  - **Static** (requires manual population of the IP settings)
    - IP
    - Subnet Mask
    - Gateway
    - DNS 1
    - DNS 2
- Ping Test
  The Ping Test utility can help in troubleshooting network connectivity problems. For instructions on using the Ping Test utility, simply leave the text field blank and click “Ping.”



Device Setup - The “Password” Tab

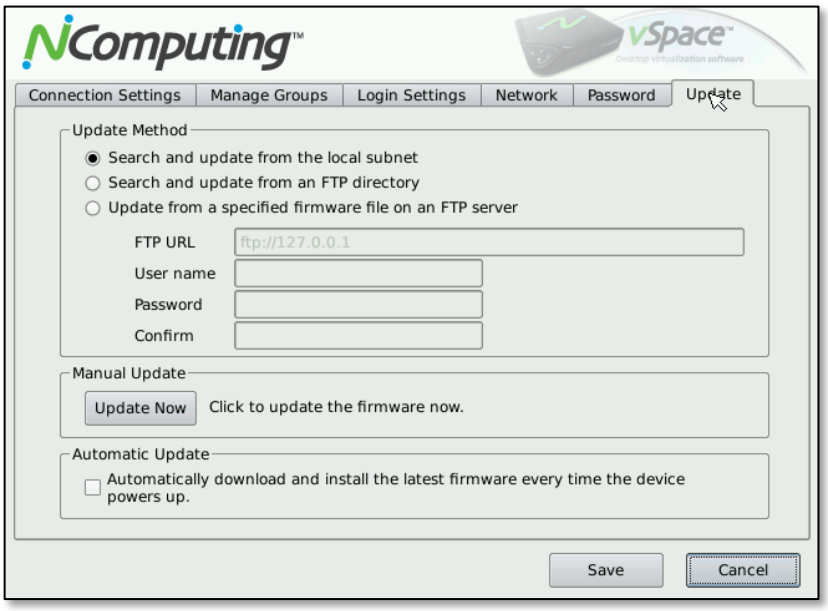
The Password tab allows the user to enable or disable the device’s firmware password. If set, the device will prompt for the password anytime a user attempts to access the Device Setup screen or tries to cancel an automatic connection. It is recommended that this password be set before deployment, to prevent tampering by unauthorized users.


NComputing
vSpace
Connection Settings
Manage Groups
Login Settings
Network
Password
Update
No password for Device Setup
Require password to enter Device Setup (password cannot be recovered)
Password:
Confirm password:
Save
Cancel

Device Setup - The “Update” Tab

The Update tab allows the user to select from multiple ways to update the device firmware from a vSpace Server host on the network using several methods.

- **Search and update from the local subnet**
  This setting instructs the terminal to look for any vSpace server in its subnet with updated firmware.
- **Search and update from an FTP directory**
  This setting instructs the terminal to search for updated firmware from an FTP directory.
- **Update from a specified firmware file on an FTP server**
  This setting allows you to direct the terminal to a specific FTP server for an update (includes fields for FTP server login)



To *push* a new firmware version use the NC Console application. Launch the NC Console application directly from the Start menu (Start/All Programs/NComputing vSpace Server/NC-Console). Once in the console navigate to Terminals > L-series and locate the desired L250 device in the right-hand pane. Right-click this device, select “Update Firmware,” and follow the onscreen prompts to initiate the firmware update.

Once the firmware update has completed, the device will automatically restart.

For more information on updating device firmware remotely from the host, consult the vSpace Management Console Guide (located in the second half of this manual).

Returning to the “Server Selection” Screen

Once a client has connected to a host, you can return to the Server Selection screen by simply logging out of the device’s current desktop session, using the “Start” bar within the OS.

L250 Multimedia Acceleration

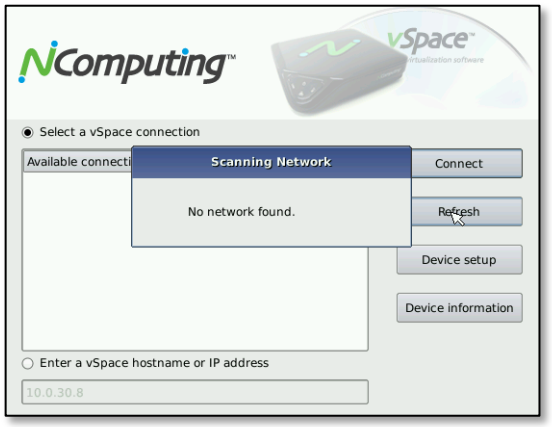
The L250 will display full screen streaming video and multi-media applications across multiple user sessions and is optimized to do so using NComputing’s vSpace Server transcoding process. Windows displaying video and multi-media applications are dynamically detected by vSpace Server and then transcoded for transport to the L250 device using the NComputing UXP network protocol. The detection and transcoding process can take a second or two to engage, during which time media will not be fully accelerated. A short flicker will precede the multimedia acceleration – this is normal. You can control whether the acceleration engages or not for non-media player applications via the NC Tray application, located in the Windows system tray, by selecting or deselecting “Browser acceleration.”

Troubleshooting & error messages

For the latest information and troubleshooting help, please visit the NComputing online knowledge base at:

http://www.ncomputing.com/support

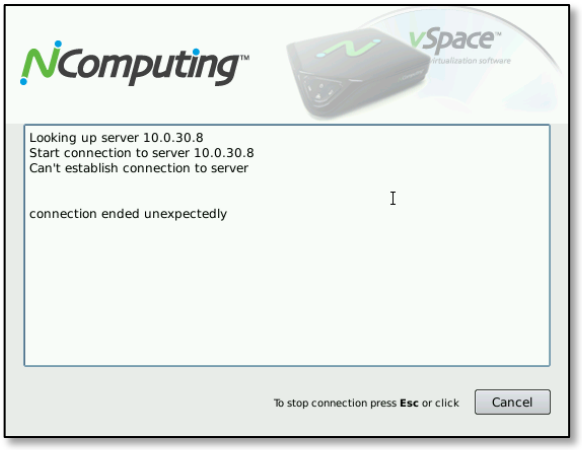
"No network found" Message



If the access device cannot connect to the network, this error message appears.

- Make sure a LAN cable is connected to the access device.
- Make sure the LAN cable connected to the access device is not a cross-over cable.
- Make sure the LAN cable is properly connected to the networking equipment.

"Can't establish connection to server" Message



This occurs when the access device cannot connect to the host PC where the vSpace Server software is installed.

- Make sure the vSpace Server program is installed on the host computer.
- Make sure the server connection list is configured correctly. See the section about configuring the access device.
- Make sure the LAN cable is properly connected to the host computer.
- Make sure the host computer and access device are in the same subnet/local area network.
- Make sure any firewall or anti-virus programs installed in the host computer or network equipment are compatible with the vSpace Server software.

"Connection ended unexpectedly" Message

This message appears when the connection stops due to abnormalities occurring on the host PC or network equipment.

- Check the Host PC or the network equipment when this message appears and restart the Host PC and access device. Unless the Host PC is rebooted, existing data in the Host PC may be used as is.
- Check to see if the host PC is overloaded or experiencing stability issues.
- Check to see if the network traffic is overloaded.

There is a feature in the vSpace Server software that keeps disconnected sessions running and available. If the user reconnects while a disconnected session for that username is present, the software will

connect the disconnected session to the new session. The user will see the desktop as it was when the disconnection occurred.

The administrator can configure the software to keep disconnected sessions running and available indefinitely or to close them automatically after being disconnected for a specified period of time. The setting is in the administrative console's system settings and is called, "Clean up disconnected sessions not in use."

Glossary

- **Client Device:** a network computing device using NComputing patented technology. It doesn't use CPU, VGA, and PC chipsets; it only uses a programmable SoC to connect to a Host PC. An access device using NComputing User eXtension Protocol (UXP) can be connected to Host PCs by using the LAN cable. Also, it can be connected to remote PCs through the Internet using TCP/IP.
- **Administrator:** a person who is responsible for managing a multi-user computing environment, such as a local area network (LAN). The responsibilities of the system administrator typically include: installing and configuring system hardware and software; establishing and managing user accounts; upgrading software; and backup and recovery tasks.
- **Alias:** a fictitious name used by an individual as an alternative to her or his true name.
- **Client/Server:** describes the relationship between two computer programs in which one program, the client, makes a service request from another program, the server, which fulfills the request.
- **Console:** the text entry and display device for system administration messages, particularly those from the BIOS or boot loader, the kernel, the init system and the system logger.
- **DHCP:** (Dynamic Host Configuration Protocol) is a communications protocol that lets network administrators centrally manage and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Without DHCP, the IP address must be entered manually at each computer in an organization and a new IP address must be entered each time a computer moves to a new location on the network.
- **Download:** the transmission of a file from one computer system to another.
- **Ethernet:** the most widely-installed local area network (LAN) technology - specified in a standard, IEEE 802.3.
- **Firewall:** a set of related programs (located at a network gateway server) that protect the resources of a private network from users on other networks and control what outside resources its own users have access to. (The term also implies the security policy that is used with the programs.)
- **Gateway:** a network point that acts as an entrance to another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node.
- **Host Computer:** a computer in which the vSpace Server program has been installed
- **Internet:** a worldwide system of computer networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers).

- **IP Address:** the Internet Protocol (IP) is basically the set of rules for one network communicating with any other (or occasionally, for broadcast messages, all other networks). Each network must know its own address on the Internet and that of any other networks with which it communicates. To be part of the Internet, an organization needs an Internet network number, which it can request from the Network Information Center (NIC). This unique network number is included in any packet sent out of the network onto the Internet.
- **LAN:** local area network (LAN) is a group of computers and associated devices that share a common communications line or wireless link and typically share the resources of a single processor or server within a small geographic area (for example, within an office building). Usually, the server has applications and data storage that are shared in common by multiple computer users. A local area network may serve as few as two or three users (for example, in a home network) or as many as thousands of users (for example, in an FDDI network).
- **Log on:** in general computer usage, logon is the procedure used to get access to an operating system or application. Almost always, a logon requires that the user have (1) a user ID and (2) a password. Often, the user ID must conform to a limited length such as eight characters and the password must contain at least one digit and not match a natural language word
- **MAC Address:** in a LAN or other network, the MAC (Media Access Control) address is your computer's unique hardware number. (On an Ethernet LAN, it's the same as your Ethernet address.) When you're connected to the Internet from your computer, a correspondence table relates your IP address to your computer's physical (MAC) address on the LAN.
- **vSpace Server:** NComputing Desktop Virtualization software
- **PC:** Personal Computer
- **Router:** in packet-switched networks such as the Internet, a router is a device or, in some cases, software in a computer, that determines the next network point to which a packet should be forwarded toward its destination. The router is connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks it is connected to.
- **User:** one who uses a computer system. Users may need to identify themselves for the purposes of accounting, security, logging and resource management. In order to identify oneself, a user has an account and a username.
- **USB:** (Universal Serial Bus) is a standard designed to allow peripherals to be connected to a computer using a standardized interface socket and to improve plug-and-play capabilities by allowing devices to be connected and disconnected without rebooting the computer.
- **UTMA:** Ultra Thin Multi Access

FAQ

For the latest information and FAQs, please visit the NComputing online knowledge base at:

Q: Must the versions of the vSpace Server software in a network be the same?

A: Different vSpace Server versions within the same environment can cause data communication problems. Please keep all vSpace Server software updated with the latest version.

Q: When I start my access device, why is the server connection list blank? I have the vSpace Server software on a host PC in my network. I can connect to the host PC if I provision its IP address in the access device.

A: This condition occurs when the host and access devices are on independent subnets. The access device can run in this mode, but servers outside the device's subnet will not automatically populate in the server list.

Q: When I go to the device list in the administration console, why do some of my access devices never show up in the list?

A: This condition occurs when the host and access devices are on independent subnets. The access device can run in this mode, but its record will never appear in the administration console's device list.

Q: When I try to do a manual firmware update on the access device, why does it not connect to the host PC and download the firmware?

A: This condition occurs when the host and access devices are on independent subnets. An access device can run in this mode, but it can only download firmware updates when it is on the same subnet as the host PC.

Q: When I start my access device, why does it not automatically update its firmware from the host PC like my other access devices do?

A: This condition occurs when the host and access devices are on independent subnets. The access device can run in this mode, but it can only download firmware updates when it is on the same subnet as the host PC.

Q: I can't download any vSpace Server software updates.

A: Make sure that the software is registered and the correct TCP/IP ports are open (see "Product Registration" section).

Q: Why does a warning message appear when I install the vSpace Server software?

A: Windows provides a firewall that displays a security warning message when a new network port is used (see below). If you click the "Keep Blocking" button, you will not be able to find NComputing servers. If you select the "Unlock" button, the port will be open unless you block it manually. If you select the "Ask Me Later" button, the port will be open temporarily and the security message will continue to appear whenever the port is accessed.

Q: Can the product support 100Mbps or 1Gbps?

A: The L250 will accept a 1Gbps connection, but the device itself does not benefit from bandwidth which exceeds its average usage (typically under 10 Mbps)

Q: What is transcoding?

A: Transcoding is the process of converting media formats from one type to another. This is a common technique used when wanting to optimize video for a given player or device. For instance, you may transcode some video to play on a mobile phone. vSpace Server has an efficient transcoding engine that converts video into a stream that can be locally decoded and displayed on the L250 device in real time, completely transparent to the end user.

Q: If a customer wants to publish video content optimized for the L250, what format is best?

A: Original content up to standard DVD resolution (D1 - 720x480) will have the best playback experience. Content may be encoded in many codecs, but if being distributed over the web, high compression H.264 or MPEG4 delivers small file sizes, but if size is not an issue, lower compression formats such as MPEG2 require less processing on the server. Please create a test clip in one of the supported formats mentioned in the Multimedia section and test it on your intended video player.

Q: The accelerated multimedia feature of the L250 sounds like simple multimedia redirection. How is this different?

A: Multimedia redirection found in terminal server products from Microsoft or Citrix simply send the entire media file over the network to be played by the client. This means that the client must have a full media player software stack and the necessary codecs to decode those files. This means that to achieve the same quality of video as the L250, a thin client must be 2-3X more expensive and require painful management of the local software stack to constantly ensure that codecs are loaded. Typically, this means the device needs to be similar to a full PC.

Q: Am I required to connect both the USB and Ethernet cables from each of the smaller access devices to the larger device?

A: If you require USB 2.0 functionality you will need to connect a USB A/B cable between the small devices and the large device as shown in the L250 Device Setup section of this guide.

The small devices can support USB 1.1 connections (a standard that most USB keyboards and mice are compatible with) without this additional connection.

NComputing vSpace Server 6
Management Console Guide

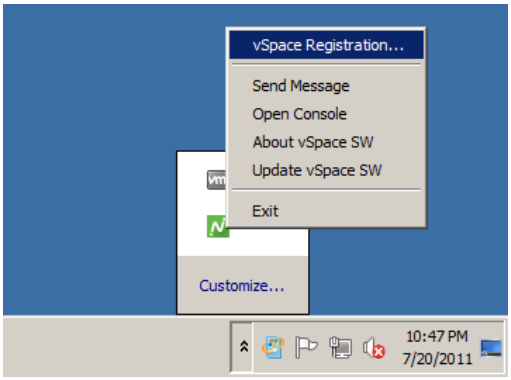
Before beginning, make sure you've downloaded and installed the latest version of vSpace for your selected operating system. For the purpose of this document we will be using **vSpace 6** in conjunction with the **L250** and **L250** access devices. Older versions of vSpace may contain variations in console layout and features, but many of the same concepts and terms will apply. While certain examples given herein highlight the L-series specifically, it should be noted that the L-series and M-series share nearly identical configuration options.

1.1 Installing vSpace

Begin by going to www.ncomputing.com/softwaredownload and downloading the latest version of vSpace. Once the download is complete, launch the vSpace installer and proceed through the guided install process. Be sure to reboot your host once the installation process is complete.

1.2 Registering vSpace

Once vSpace is installed, register the host software by right-clicking on the NComputing icon in your system tray and selecting "vSpace Registration," as shown in the image to the right.



This will launch the Registration Utility and you will be guided through the remainder of the registration process.

1.3 Connecting Your Devices

vSpace is now ready to accept connections from L and L-series devices. Keep in mind that, by default, your devices will automatically look for vSpace hosts on their designated subnet. You can alter this behavior from the devices themselves or from within the NC Console **(5.4 Connections Tab)** at any time.

Depending on your selected operating system, further configuration steps may be required for the OS itself (such as adjusting Local Policies or User Groups). Be sure to review our general deployment

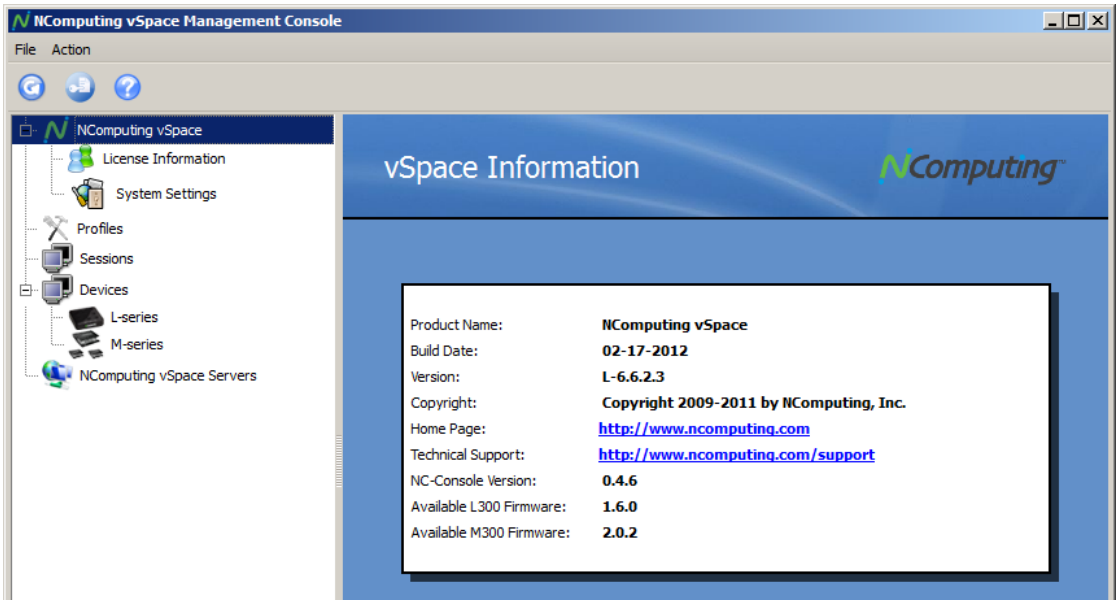
checklist to ensure that your environment is properly configured to facilitate device sessions. http://www.ncomputing.com/kb/NComputing-L-series-Deployment-Checklist_309.html

Once they have connected and received a session, you should register and update your device firmware (**5.1** L-series**Update Tab**) as soon as possible.

2.0 NComputing vSpace

2.1 vSpace Information

Launch the vSpace Management Console by navigating from the Windows Start button to "NComputing vSpace," and then click on "NC-Console." Once the console launches, left-click on the "NComputing vSpace" section of the left navigation tree to display information on the current vSpace build installed on your host. The vSpace Information screen provides the following information:



Product Name	The product name of the current NComputing software installed on the host
Build Date	The publish date of the vSpace build currently installed
Version	The version number of the vSpace build currently installed
Copyright	vSpace Copyright information
Home Page	The official NComputing website URL
Technical Support	The official NComputing Technical Support URL
NC Console	The version number of the vSpace Console currently in use

Version	
Available (L250 / M300) Firmware	Indicates the current firmware version available for download from this host

Left-click on the “+” sign next to the “NComputing vSpace” section of the left navigation tree to display the “License Information” and “System Settings” sections.

2.2 License Information

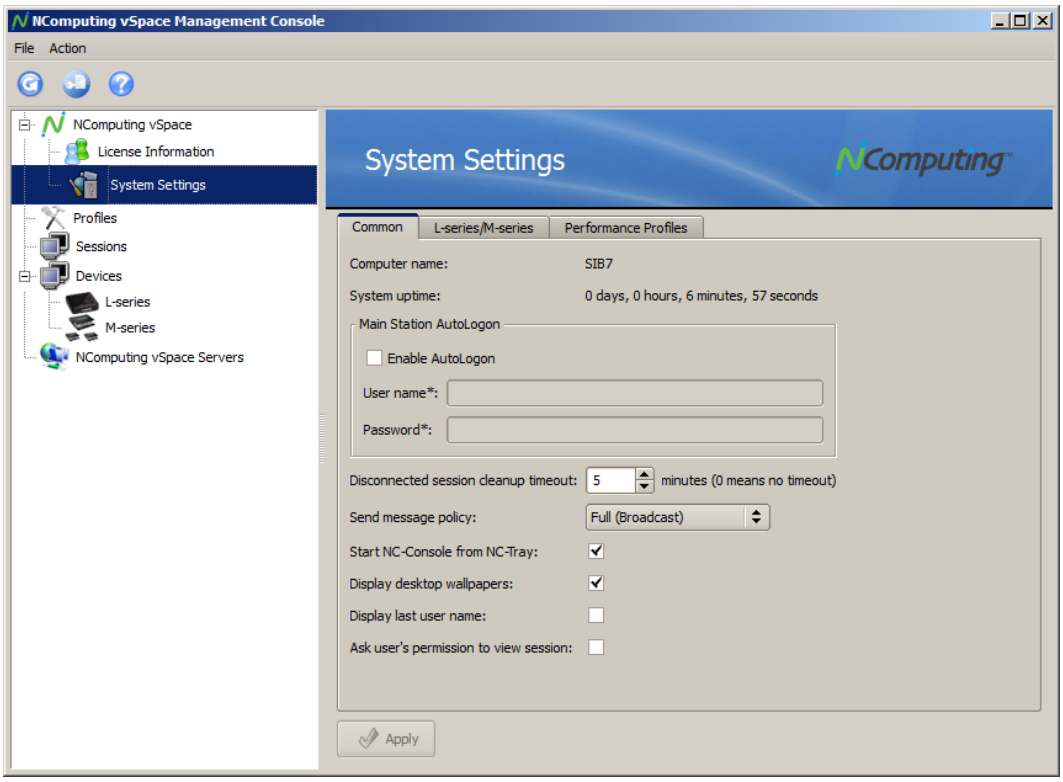
Left-click on the “License Information” section of the left navigation tree to display licensing information for the vSpace software on your host. The License Information screen provides the following information:

License Type	The type of license associated with the current vSpace install
Serial Number	The vSpace Server Software Serial Number
Maximum Number of Connections	The maximum number of simultaneous NComputing device sessions allowable under the current license
Registered Device Session Duration	The length of time each registered device is allowed to maintain a session
Name, Company, Country, Address, City, State, Zip, Email, Phone	Contact information and other details provided during registration

Reseller / Dealer	The Reseller or Dealer indicated during registration
Type of Use	The use-case indicated during registration
Client-Specific Licenses	Additional Client Device specific licensing information

2.3 System Settings - Common

Left-click on the “System Settings” section of the left navigation tree to display settings that affect the host, as well as devices that connect to it. The “Common” tab provides the following options and information:



Computer Name — The system name of the vSpace host

System Uptime — Displays the length of time the host has been running without interruption. Reboots and shut-downs will reset this counter.

Main Station Auto Logon — Enabling this feature with a valid user name and password will cause the host to automatically log in to Windows when it boots. Otherwise, a user will need to manually enter a user name and password each time the host starts up.

Disconnected Session Cleanup Timeout — This value determines how long the host will wait before closing a user session after its device disconnects. A larger value provides a longer “grace period” during which users can re-connect their device without losing progress.

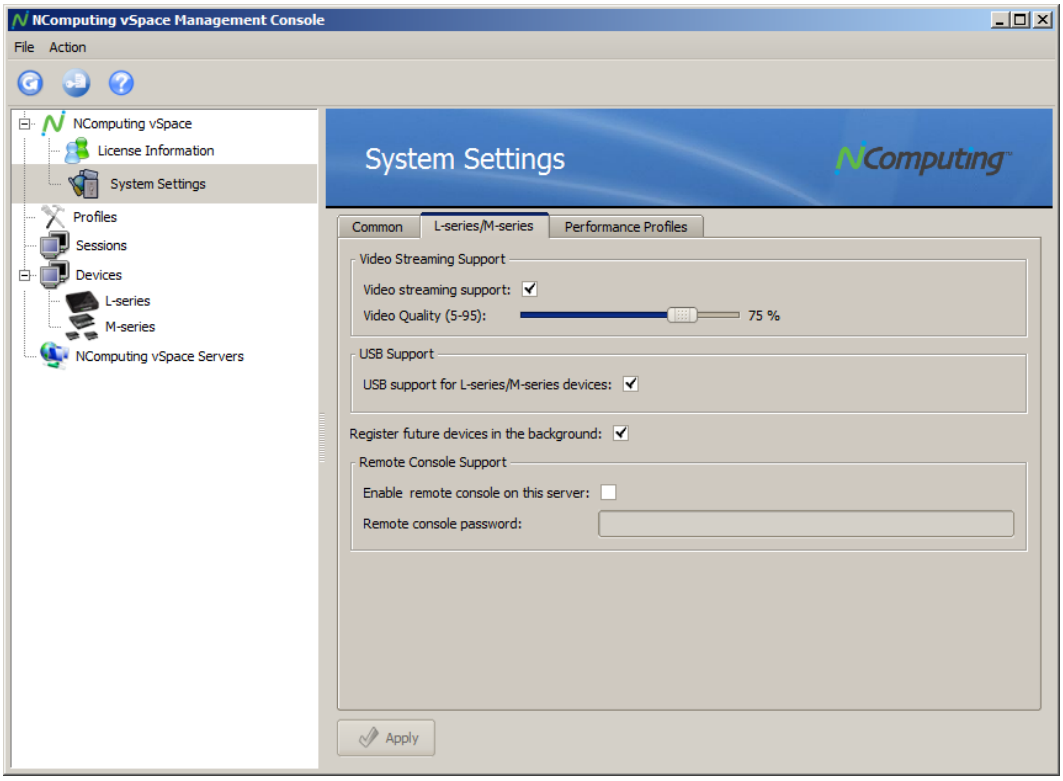
Send Message Policy — This setting controls the NC Message feature, which allows devices to send messages to each other. **Full** allows users to send messages to all connected devices. **Point-to-point** restricts messages to a single target device. **Disabled** turns

this functionality off entirely.

Start NC Console from NC Tray	This setting determines whether the NC Console can be opened from the NC Tray icon in the task bar.
Display Desktop Wallpapers	Enabling this feature will allow device users to select and display custom Desktop Backgrounds within their Windows sessions.
Display Last User Name	Enabling this feature will auto-populate the user name of the last user to log in when a new user attempts to log in to Windows.
Ask User's Permission to View Session	Enabling this feature will prompt the target user session for permission if someone attempts to view their session through the NC Console.

2.4 System Settings – L-Series/M-series

The "L-Series/M-series" tab provides access to settings that control video streaming, USB support, and remote console support among other features.

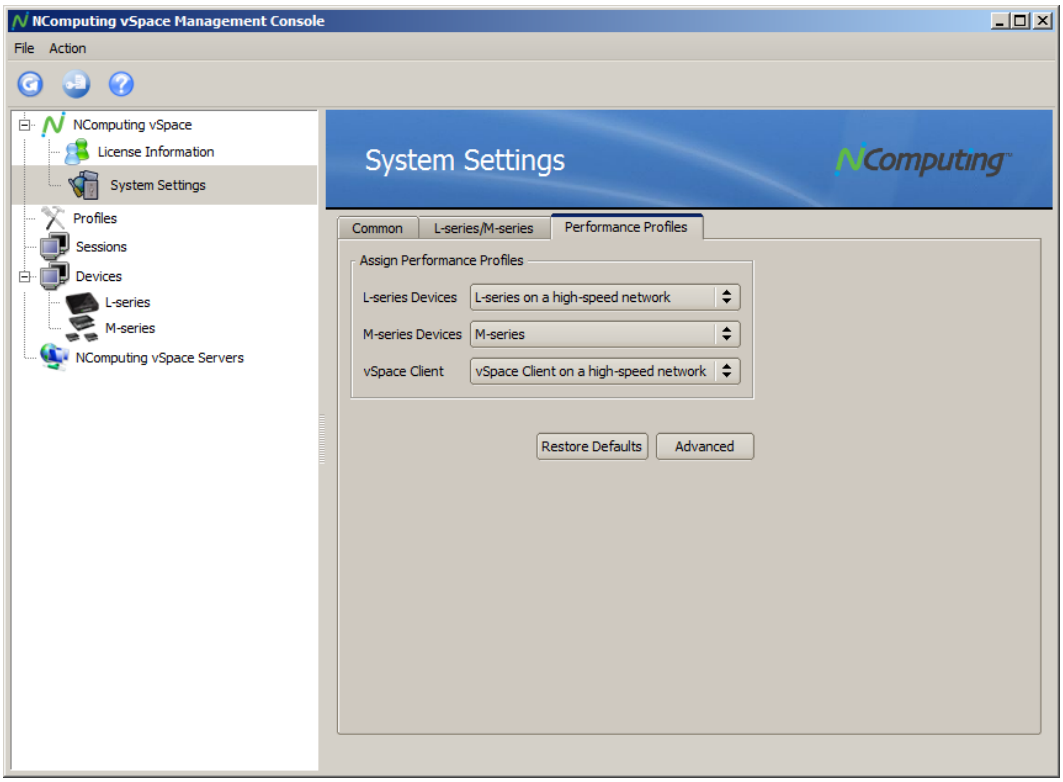


The "L-series/M-series" tab provides the following options and information:

Video Streaming Support	Enables or disables vSpace's proprietary video compression and streaming technology.
Video Quality	Increases or decreases the streaming compression ratio used by vSpace. Higher compression means more CPU load, but lower network bandwidth use. Lower compression means lower CPU load, while increasing the amount of data streamed across the network.
USB Support for L-Series/M-series Devices	Enables or disables USB support for L-series and M-series devices.
Register Future Devices in the Background	Enabling this feature instructs the vSpace host to automatically register and activate L-series and M-series devices that connect in the future. This process will be completed silently in the background and requires no further interaction.
Enable Remote Console on this Server	Enabling this feature will allow other vSpace hosts to view this host's settings, as well as information on active sessions and USB port assignment.
Remote Console Password	Sets the desired password for Remote Console access by other hosts. Hosts attempting to connect remotely to this system will be prompted for this password.

2.5 System Settings – Performance Profiles

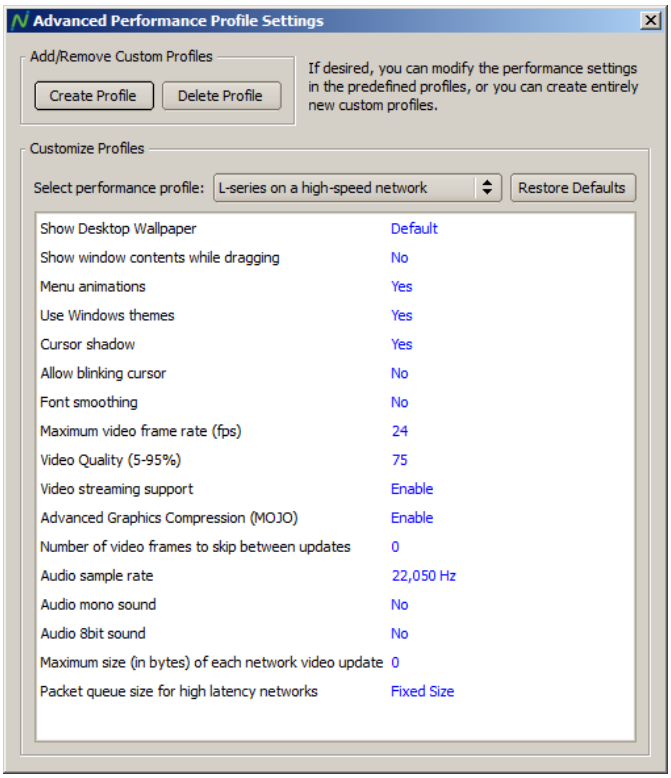
The "Performance Profiles" tab allows administrators to configure and assign separate performance configurations for varying network environments (such as Wireless, Low, and High Speed networks).



Assign Performance Profiles	Allows the administrator to choose from a selection of custom performance profiles to be used in specific network environments.
Advanced	Provides additional advanced configuration options. (see section 2.6)

2.6 System Settings – Performance Profiles ADVANCED

The Advanced menu allow administrators to create, edit, or delete individual performance profiles. The specific settings and their effects are detailed below.



Administrators can add or remove profiles using the “Create Profile” and “Delete Profile” buttons located to the top left of the menu. An existing profile can be selected using the drop down at the top of the “Customize Profiles” section of the menu. Defaults can be restored using the “Restore Defaults” button to the right of the menu.

Show Desktop Wallpaper — Enable the use of desktop wallpapers in user sessions. This can also be set to conform to existing user profile settings (default).

Show window contents while dragging — Enabling this setting shows full window contents when moving a window on the desktop. Disabling this setting will show only the window’s outline while it is moving and can improve the overall performance of the desktop experience.

Menu animations — Enabling this setting enables graphical elements within the OS such as window animations. Disabling this option can improve desktop performance.

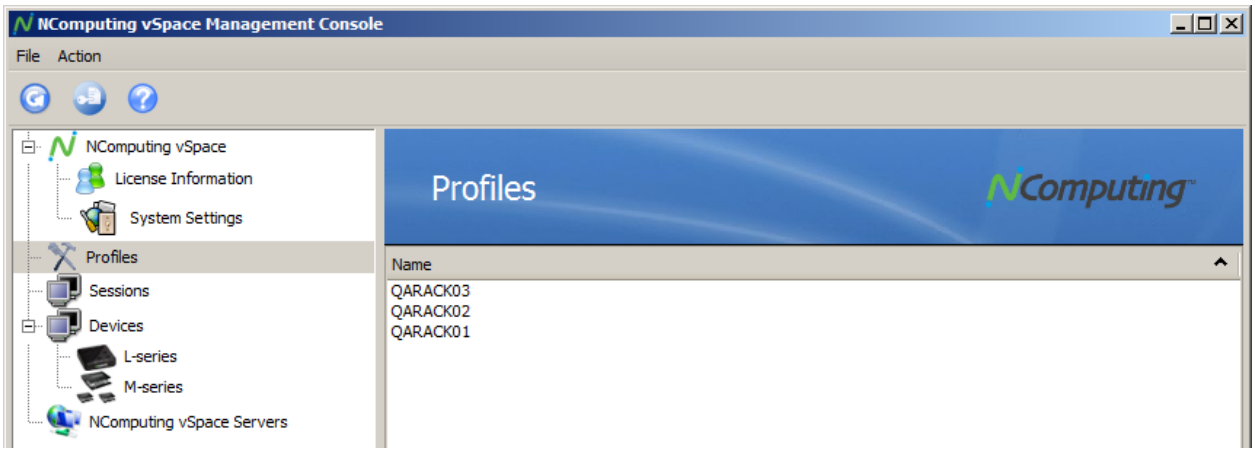
Use Windows themes — Setting this to “Yes” enables advanced Windows themes and graphical elements. Disabling this setting can improve desktop performance.

Cursor Shadow — Enables or disables the shadow seen beneath the mouse cursor. (Mouse shadows are not supported)

Allow blinking cursor	Enables or disables the blinking cursor effect.
Font smoothing	Enables or disables smoothing which can improve the appearance of fonts in some situations at the cost of increased resource usage.
Maximum Video frame rate	Enter a value here to limit the frame rate of streaming video to a desired number. Lower numbers will reduce network traffic when streaming videos to client sessions.
Video Quality (5-95%)	Decreasing this percentage will dramatically reduce the amount of network traffic being sent to client sessions at the cost of video quality.
Video streaming support	This setting enables or disables the advanced video streaming capabilities available to L250 and L250 devices.
Advanced Graphics Compression (MOJO)	Allows users to have more than one window open and streaming video at a time per session. Note that video performance may be better when limited to a single stream at a time.
Number of video frames to skip between updates	This value affects the rate at which the session image is updated. Larger values reduce network traffic but create a larger delay between updates.
Audio sample rate	Sets the audio sample rate to be used by sessions.
Audio mono sound	Sets the session to use mono sound.
Audio 8bit sound	Sets the session to use 8-bit sound.
Packet queue size for high latency networks	Increasing this setting can provide a smoother streaming experience in high-latency networks.

3.0 Profiles

Left-click on the “Profiles” section of the left navigation tree to display information on device profiles that have been saved for future use. You can edit or delete these profiles by right-clicking on them in the profile list on the right side of the console.

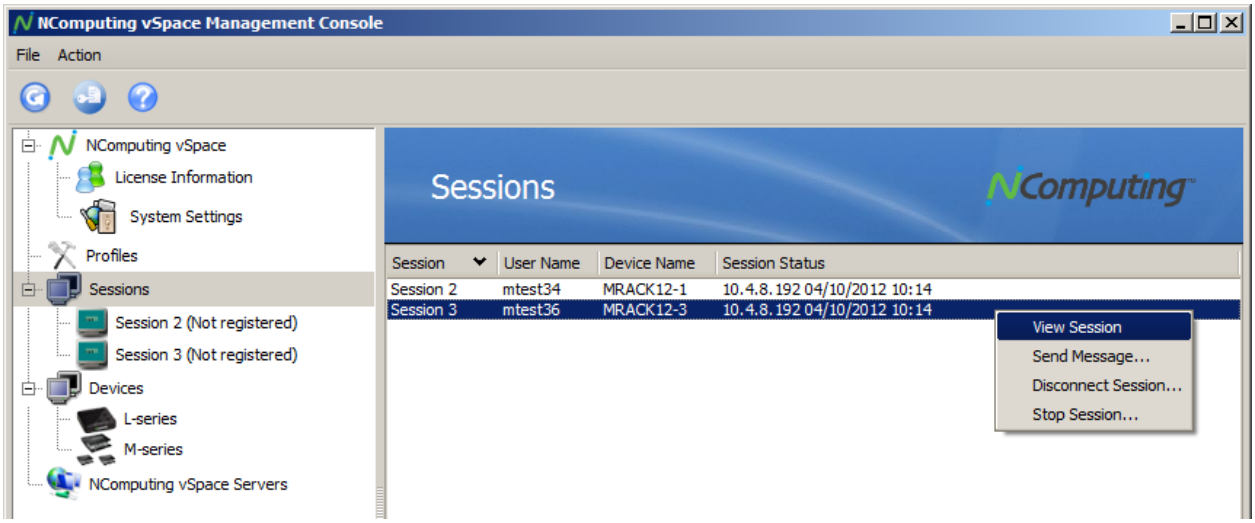


Profiles can be “pulled” from existing devices and then “pushed” to entire groups of devices to simplify the process of configuring several devices at a time. See **5.11 Configuration Profiles** for more information on pushing and pulling profiles.

4.0 Sessions

4.1 Session Overview

When one or more devices connects to your vSpace host, the “Sessions” section of the left navigation tree will be populated with a list of active sessions. Left-click on the “Sessions” section to display an overview of active sessions on the right side of the console.

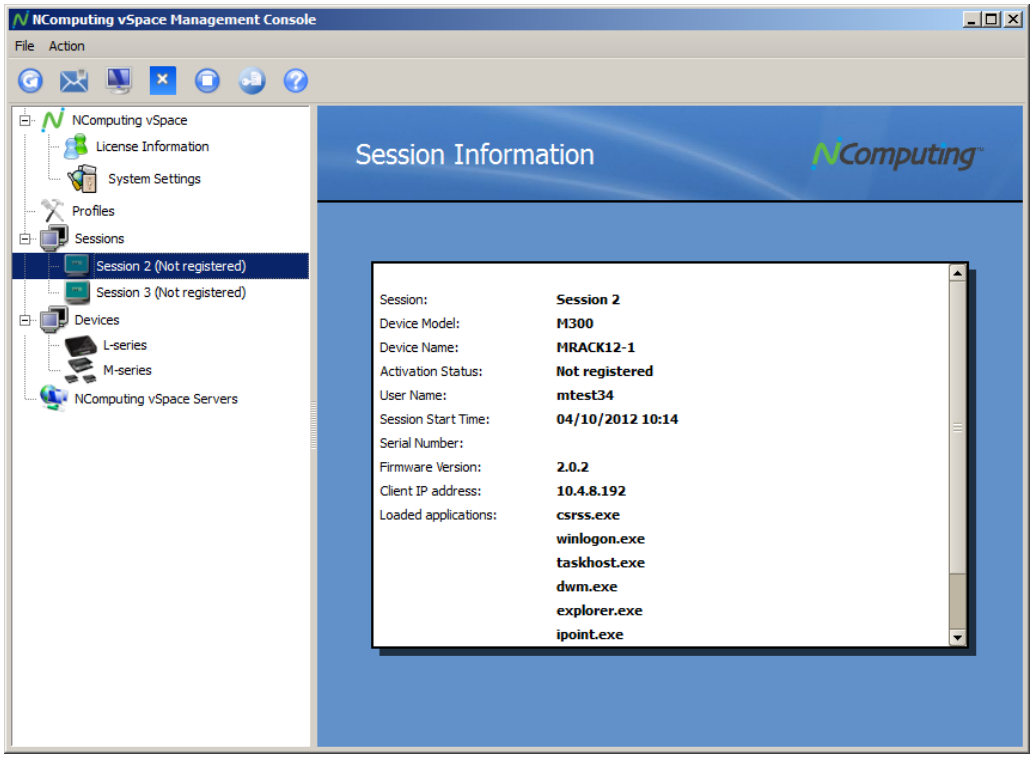


Right-click on any of the active sessions listed on the right side of the console to display the following four options.

View Session	Select this option to allow you to view the desktop of the selected session.
Send Message	Select this option to broadcast a short text message to the selected session.
Disconnect Session	Disconnects the device from the current session, but leaves the session active for a period of time for ease of reconnection.
Stop Session	Logs the user out of the current session.

4.2 Session Information

In addition to the session summary, you can expand the “Sessions” section of the left navigation tree to reveal information about individual sessions. Select these sessions to display additional information on the sessions themselves. The Session Information screen provides the following information:

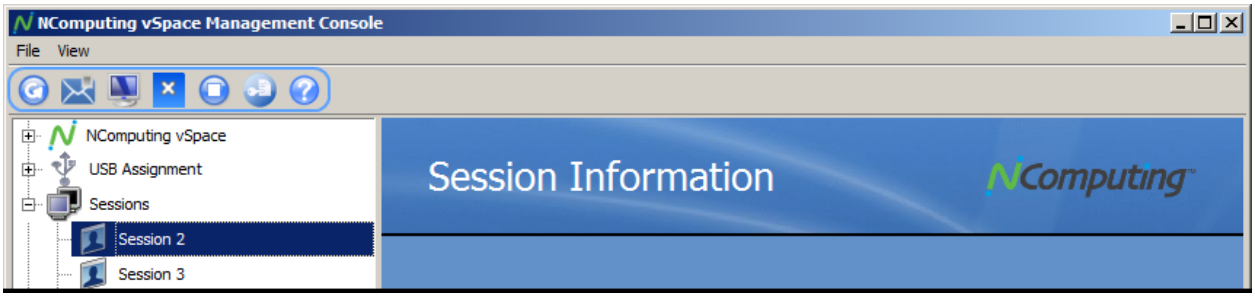


Session	The session’s identifying number
Device Model	The model of device connected to this session
Device Name	The name of the device connected to this session (user configurable)
Activation Status	The device’s activation status, which is dependent on registration
User Name	The Windows User Name associated with this session
Session Start Time	The date and time that the session was created
Serial Number	The serial number of the device associated with this session
Firmware Version	The firmware version being used by the device associated with this session
Client IP Address	The IP address of the device connected to this session

Loaded Applications	The applications currently in use by this session

4.3 Session Controls

A number of controls that provide easy access to some common operations appear at the top of the console. These operations include the ability to remotely view a specific session or to send that session a message.



Refresh – Refreshes Device and Session data within the vSpace console.

Send Message – Sends a private message to the selected session.

View* – Remotely displays the selected session, providing the same desktop view that the user is currently seeing.

Disconnect – Disconnects the device from its associated session.

Stop – Stops the selected session, effectively logging the user out.

Registration –Opens the Registration dialog box.

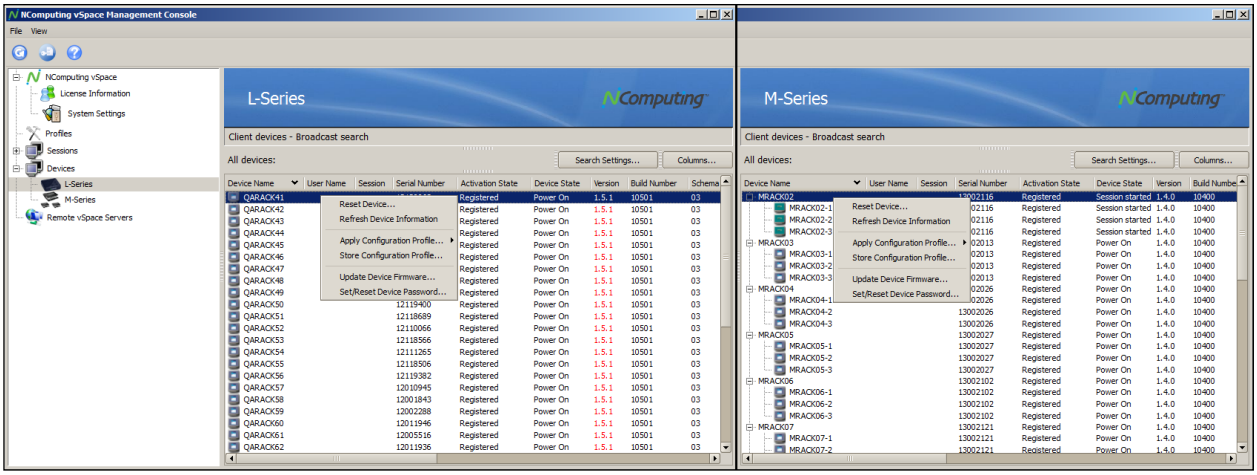
Help – Opens the Ncomputing Support page on an external web browser.

*While using the "View" function on a session, administrators can right-click on the top bar of the view window to take control of that session.

5.0 Device Management

5.1 L-series / M-series

The L-series and M-series sections of the console provide all of the tools and options needed to configure and maintain your devices, as well as important usage information (such as user name and session number). The L and M-series devices share nearly identical configuration options.



Right-click on one or more devices displayed in the L-series or M-series Devices list to display some basic maintenance options. Standard left-click "box" selection, shift-click and ctrl-click methods allow for the selection of multiple devices at once.

- Reset Device – Resets the selected device.
- Refresh Device Information – Refreshes all information on the selected device within vSpace.
- Apply Configuration Profile* – Applies a stored Configuration Profile to the selected device(s).
- Store Configuration Profile* – Stores a profile of the selected device's settings for future use.
- Update Device Firmware – Initiates the Firmware Update process on the selected device.
- Set Device Password – Opens the Device Password menu for the selected device.

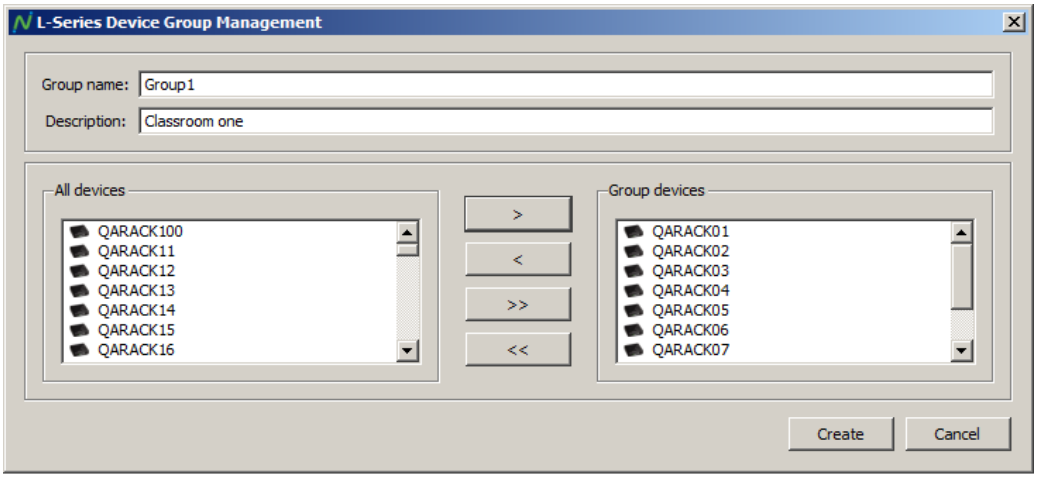
* See **Section 5.11** for more information on storing and applying configuration profiles.

Double-click on any device displayed in the L-series Devices list to open the Device Settings menu. This menu contains the following sub menus, which are explained in detail in the pages that follow. **(cont. in section 5.3)**

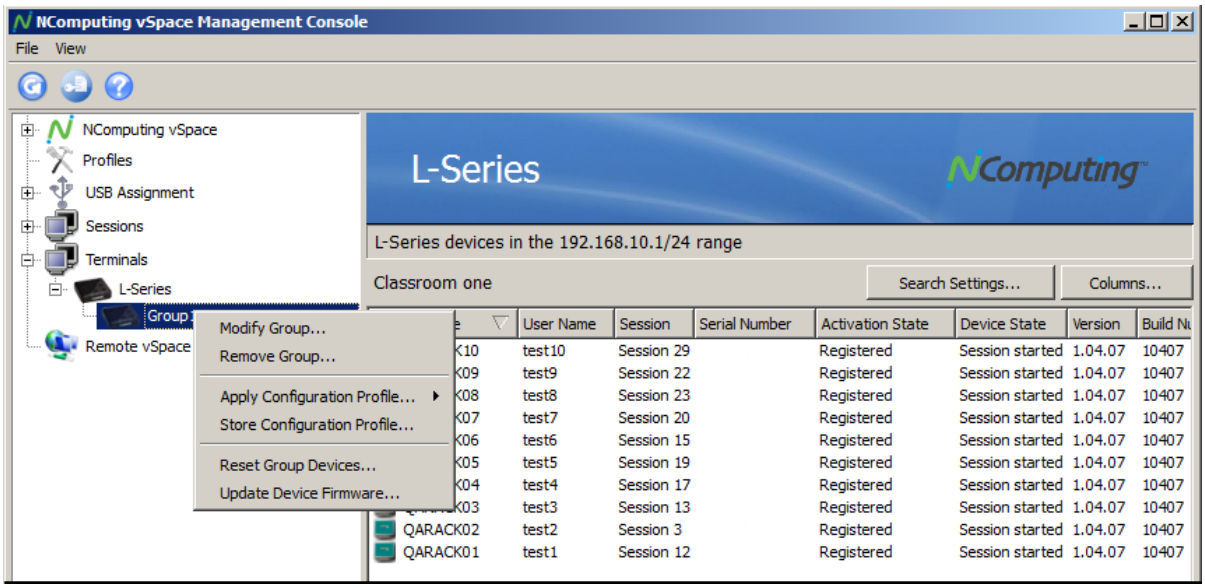
- Information – Basic device information
- Connections – Connection options
- Server Groups – Details on preconfigured Server Groups and their contents
- Login – Options for manual and automatic login
- Network – Network settings and options
- Password – Device password options
- Update – Controls for updating device firmware

5.2 Device Groups

When dealing with large numbers of devices spread throughout several logical or physical groups (for example, deployments across several office floors or classrooms), it can be advantageous to group these devices within the vSpace console itself. This can be accomplished by right-clicking on the “L-series” section inside the “Devices” group within the left navigation tree and selecting “Add Group,” which opens the Device Group Management interface, as shown below:

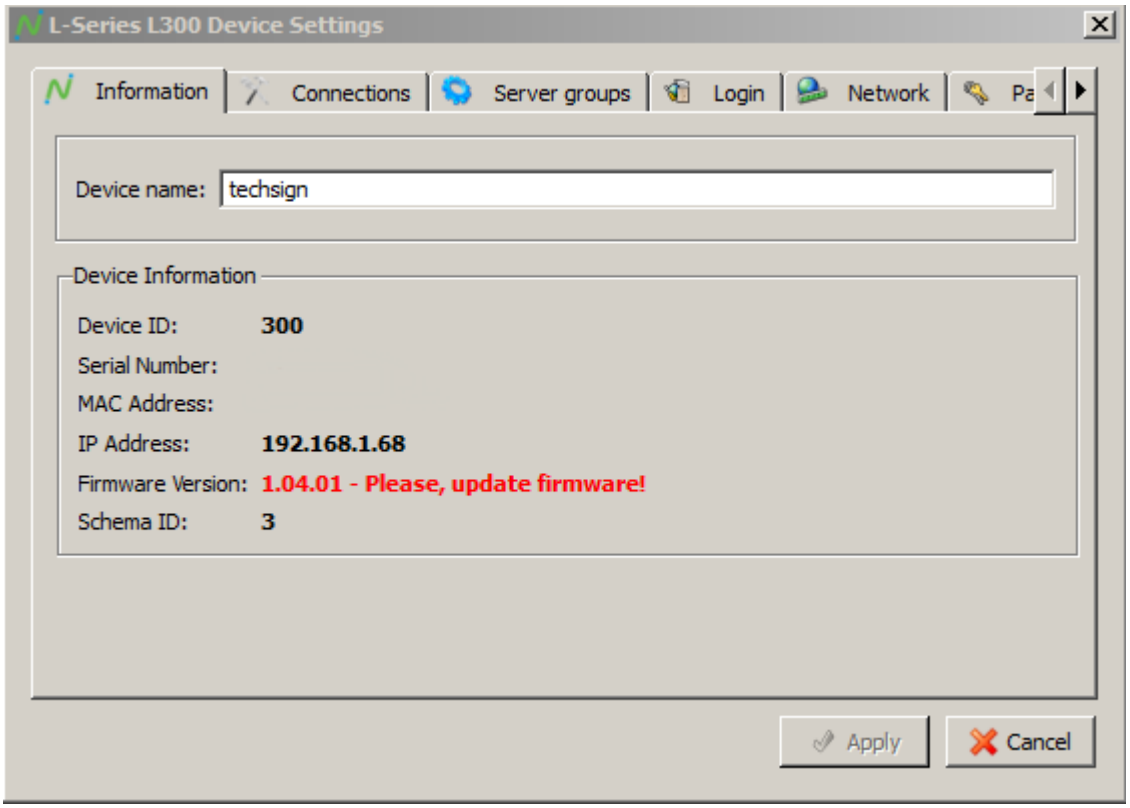


From this interface, devices can be added to a group which can be given a name befitting the nature of your deployment. Once created, groups can be selected from the “L-series” section of the console for easy configuration, as shown below:



5.3 Information Tab

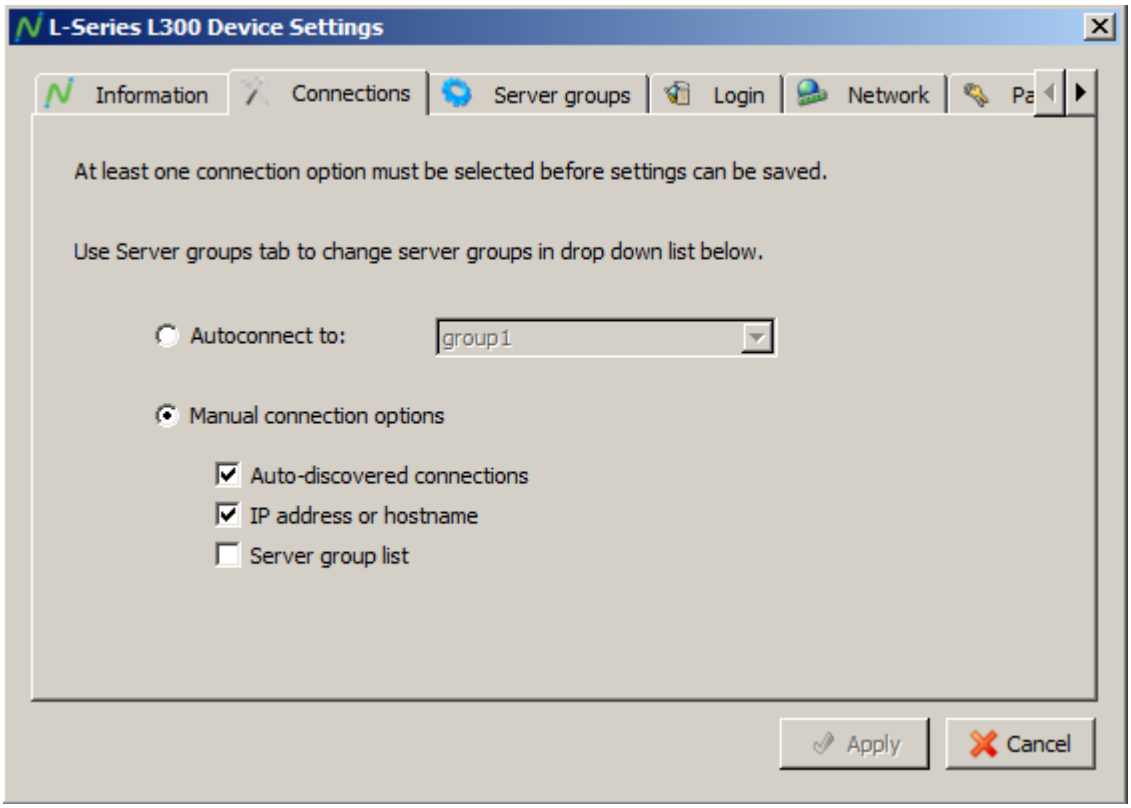
The “Information” tab provides basic information on a selected device, including its network address and serial number. This tab also allows you to rename the device to facilitate identification.



Device Name	Displays the designated device name. This can be edited as desired.
Device ID	The Model ID of the selected device (L250's have a Device ID of 300)
Serial Number	The serial number of the selected device
MAC Address	The MAC address of the selected device
IP Address	The current IP address of the selected device
Firmware Version	Displays the currently loaded firmware version of the selected device. In this example, the device firmware is out of date, as indicated by the text "Please update firmware."
Schema ID	Miscellaneous build information (for NComputing internal use only)

5.4 Connections Tab

The "Connections" tab provides several host configuration options that determine how the device finds and then connects to available hosts. From here, you can set the device to automatically detect available servers, or instruct the device to connect to specific predetermined hosts or groups of hosts.

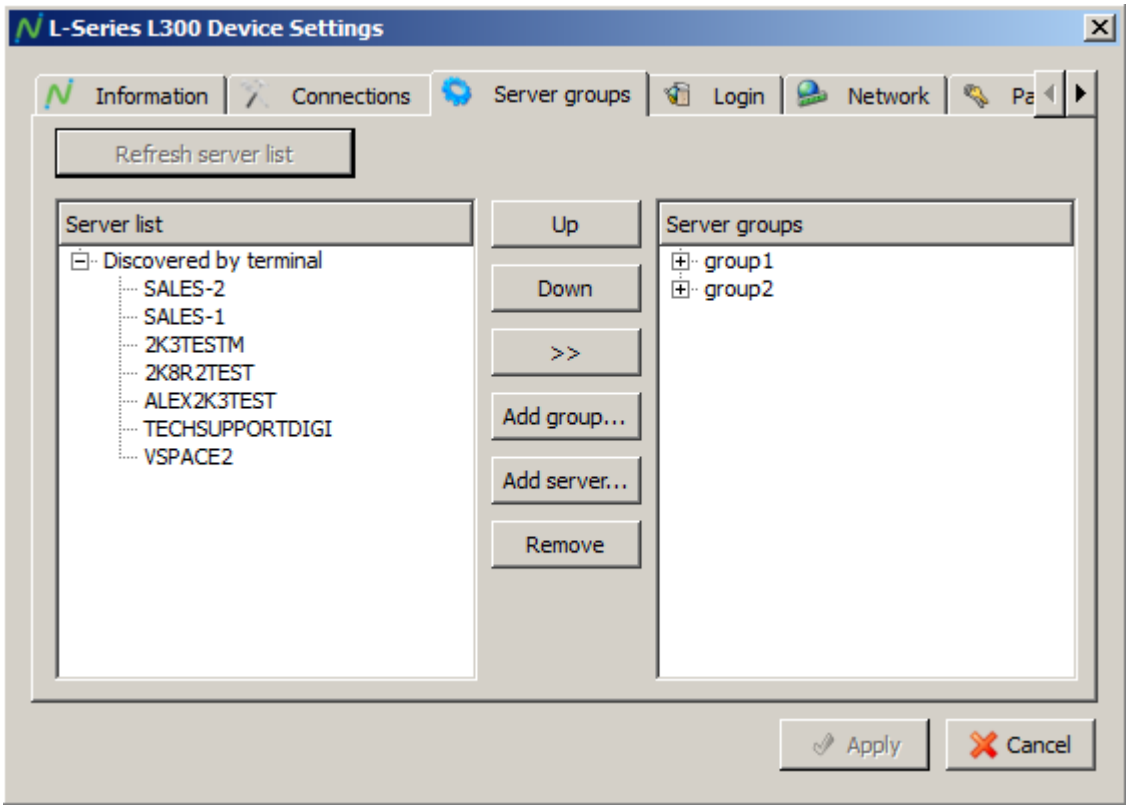


Autoconnect to	Configures the device to automatically connect to a predefined server location or server group.
Manual connection options	Configures the device so that the user can select a specific host, IP or Server Group each time the device boots.
Auto-discovered connections	Enable to display all available hosts on the device's subnet.
IP address or hostname	Enable to allow the user to type in a specific IP or host name.
Server group list	Enable to allow the user to select a server group to connect to.

5.5 Server Groups Tab

The "Server Groups" tab allows administrators to combine several servers into a group, and then instruct the device to connect only to servers in that group. Exactly which servers are included in a given

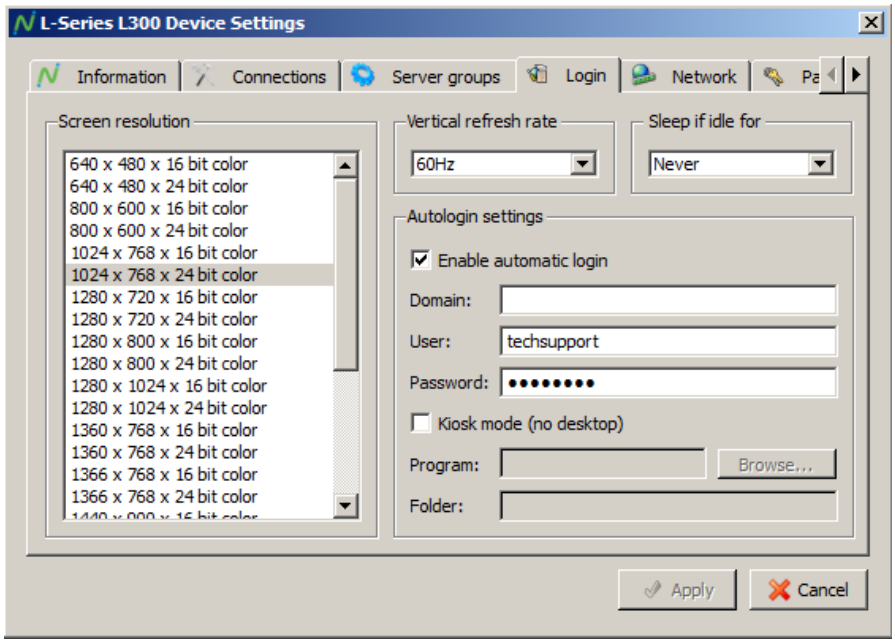
group and the order in which devices connect to them can be designated and altered within this menu. When the device is setup to autoconnect to a server group, it will connect to the first available server in the list (in the order set in the group). If the first server is not available, the device will then connect to the next server in the group, and so on. This is a key component for using the auto-failover feature of the L250.

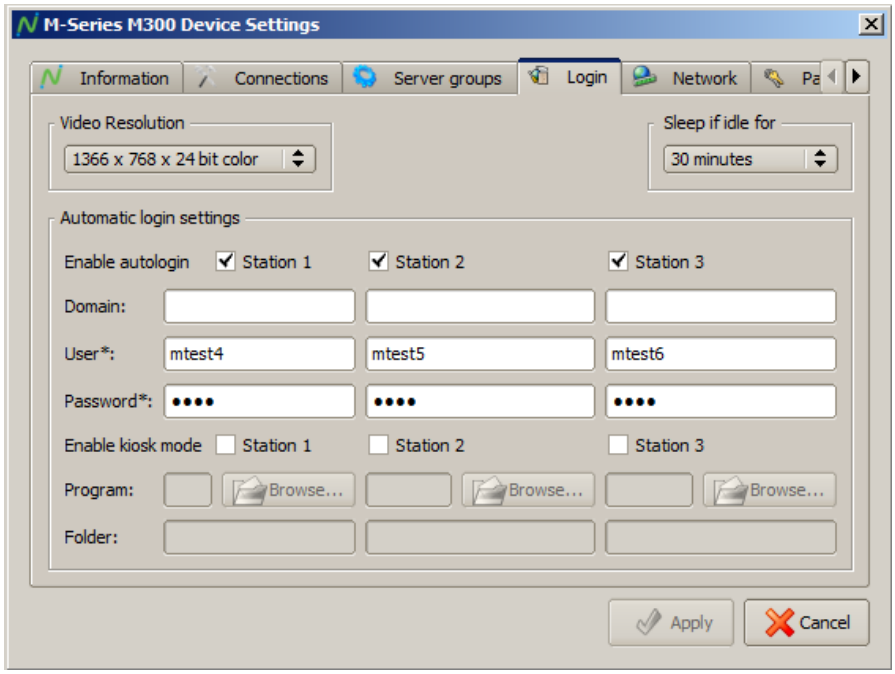


UP / DOWN	Changes the order in which a server within a group will be accessed.
>>	Adds a detected server to a server group.
Add Group	Creates a new server group.
Add Server	Adds a new server to an existing server group.
Remove	Removes the selected server or group.

5.6 Login Tab

The “Login” tab provides several configuration choices that determine how the device will behave once it connects to a given host system, including screen resolution and automatic login options. Note that the L-series and M-series Login configuration menus vary slightly as seen below.

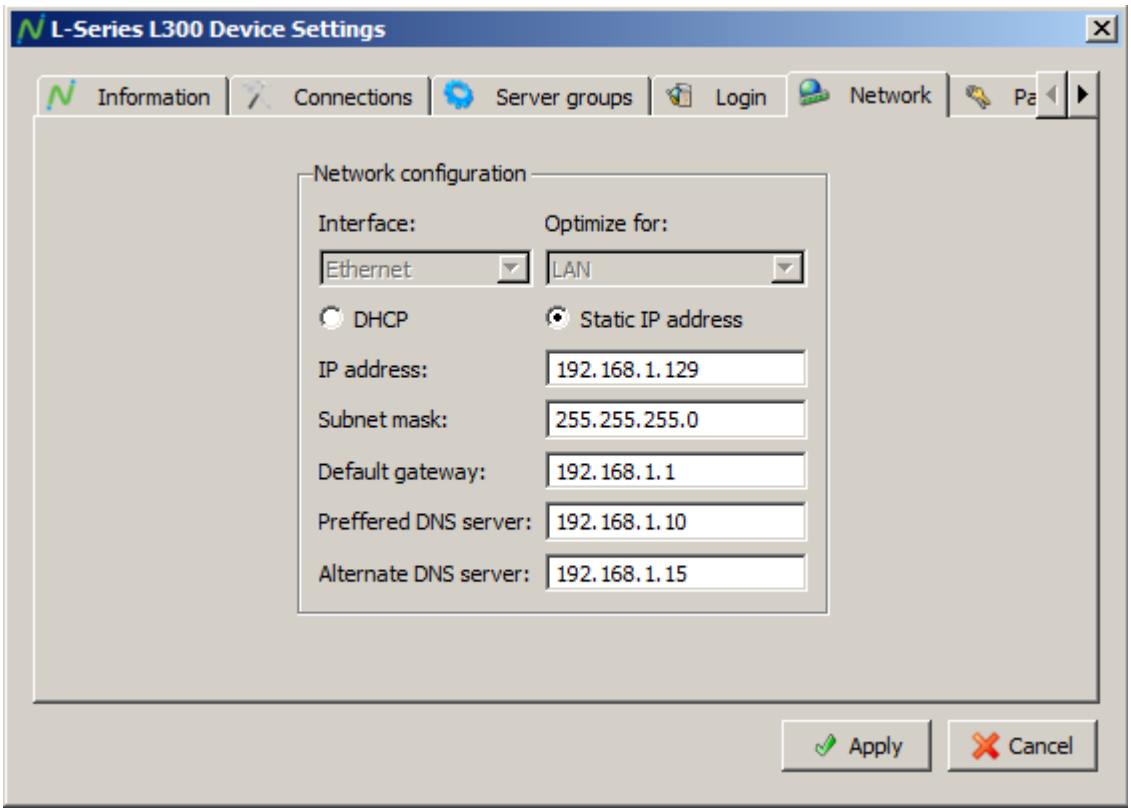




Screen Resolution	Sets the screen resolution and color depth to be used by the device once it connects to a host. Note that for the M-series, all three clients in an M-series kit share the same resolution and color depth settings.
Vertical Refresh Rate	Sets the vertical refresh rate (in Hz) to be used by the device.
Sleep If Idle For	Instructs the device how long to wait before turning off its video signal (thereby allowing the monitor to enter its built-in screen saver mode).
Enable Automatic Login	Instructs the device to use a specific user name and password when it connects to a host. When enabled, the credentials will be entered automatically, allowing for a swift login. Specify the user credentials in the fields below this option.
Kiosk Mode	Instructs the device to immediately launch a specific application on login, instead of providing the standard Windows desktop experience.
Program	The name of the executable or object to be launched on startup
Folder	The path to the file to be executed

5.7 Network Tab

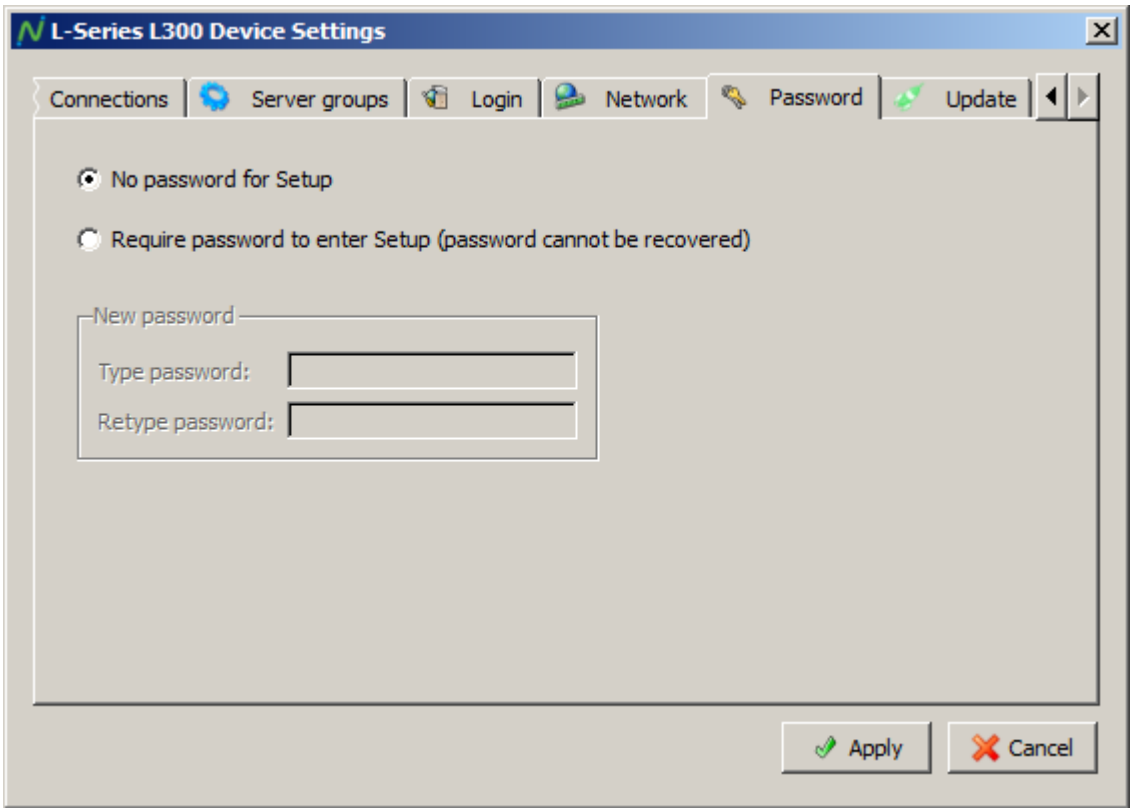
The “Network” tab provides standard network configuration options, including a choice between static and dynamic IP acquisition.



Interface	Indicates the device’s network interface.
Optimize for	Indicates the type of network being used; LAN = Local Area Network.
DHCP	Instructs the device to acquire its network information from a DHCP server.
Static IP Address	Instructs the device to use specific network settings, which can be specified in the fields below this setting.

5.8 Password Tab

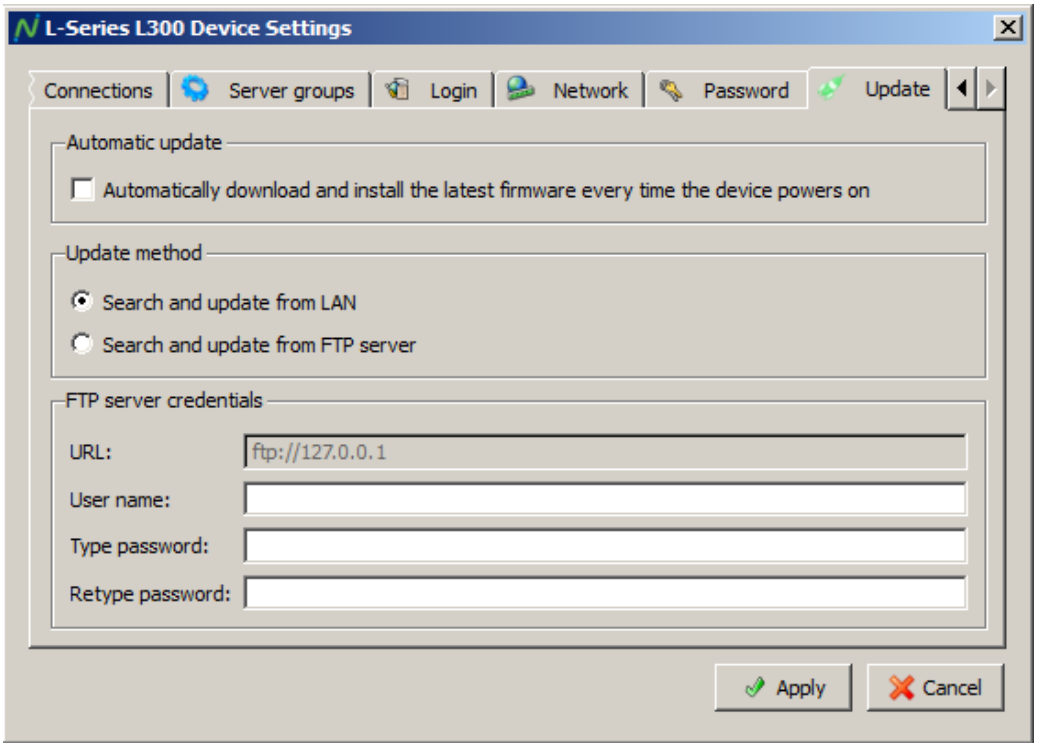
The “Password” tab provides the option of setting a password that will restrict future access to device configuration. Use this tab to enable and disable password protection.



No Password for Setup	Sets the device to be accessible for configuration by any user.
Require Password to Enter Setup	Sets the device to require a password before device settings can be altered. If a password does not currently exist, it can be entered in the fields directly beneath this option.

5.9 Update Tab

The “Update” tab is used to check for and install (if available) firmware updates for the device. This tab allows you to select from several different update methods, and can be set to draw firmware updates from inside your network, or from an external FTP location.

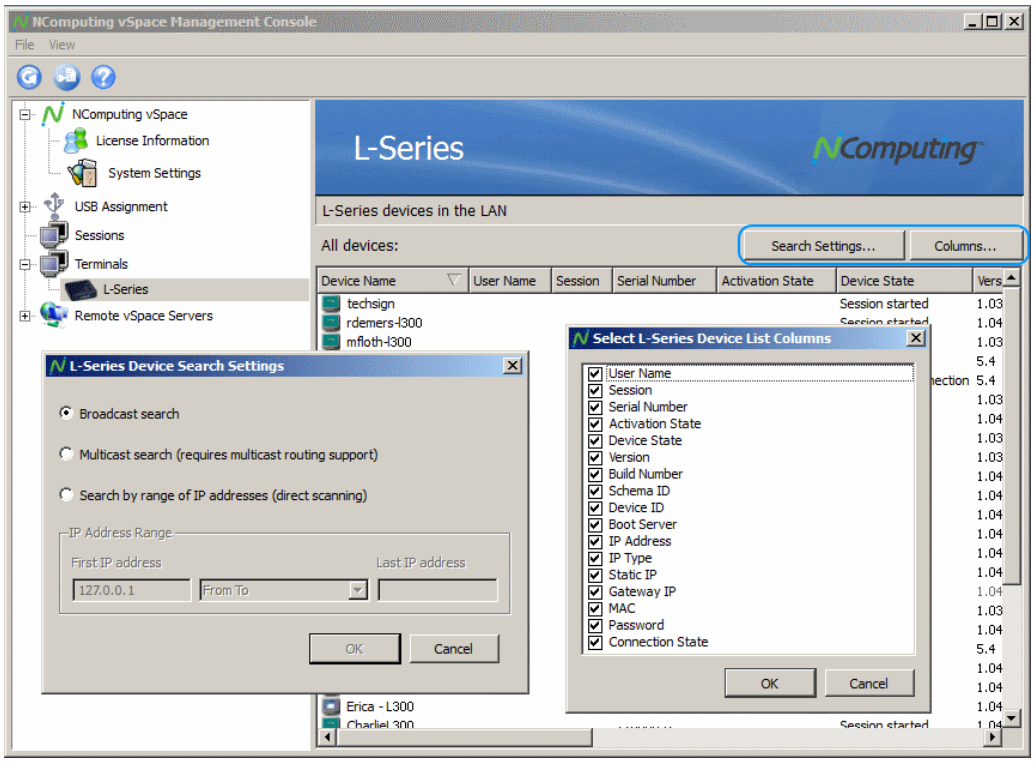


Automatic Update	Enable this option to instruct the device to automatically check for newer firmware that is available on the servers it can see during startup. If found, it will then download and install this firmware automatically.
Search and Update from LAN	This option instructs the device to search for updated firmware within the local area network it resides in.
Search and Update from FTP Server	This option instructs the device to search for updated firmware at a specific FTP location. Enter the full path of a specific firmware file to force the device to use that specific file (which allows for downgrading if needed). Enter the path of a folder that contains multiple firmware versions and a firmware index file to instruct the device to use the most recent firmware version available, according to the index file. For more information on firmware updates via FTP, visit http://www.ncomputing.com/kb/Using-FTP-to-update-L250-Firmware_308.html
FTP Server	These fields allow you to enter the URL, user name and password for the FTP

Credentials server you wish to use (if required).

5.10 Search Settings and Columns

The “Search Settings and Columns” features in the upper-right side of the “L and M-series” sections provide additional tools for locating, sorting and displaying device information.



The L/M-series Device Search Settings dialog box provides administrators with the ability to locate devices anywhere on the network (provided that the connections in question are allowed by the network’s routing rules), as well as the ability to search specific IP ranges, while ignoring others. The dialog box contains the following options:

Broadcast Search Searches for devices on the same subnet as the host using UDP broadcast.

Multicast Search Uses the network Multicast functionality of certain high-end routers and switches to more efficiently discover devices. (Must be supported by network hardware.)

Search by Range of IP Addresses Searches for devices within a specified IP range.

IP Address Range Provides the necessary fields to specify what range of IP addresses you wish to search within (only applies to “Search by Range of IP Addresses” setting).

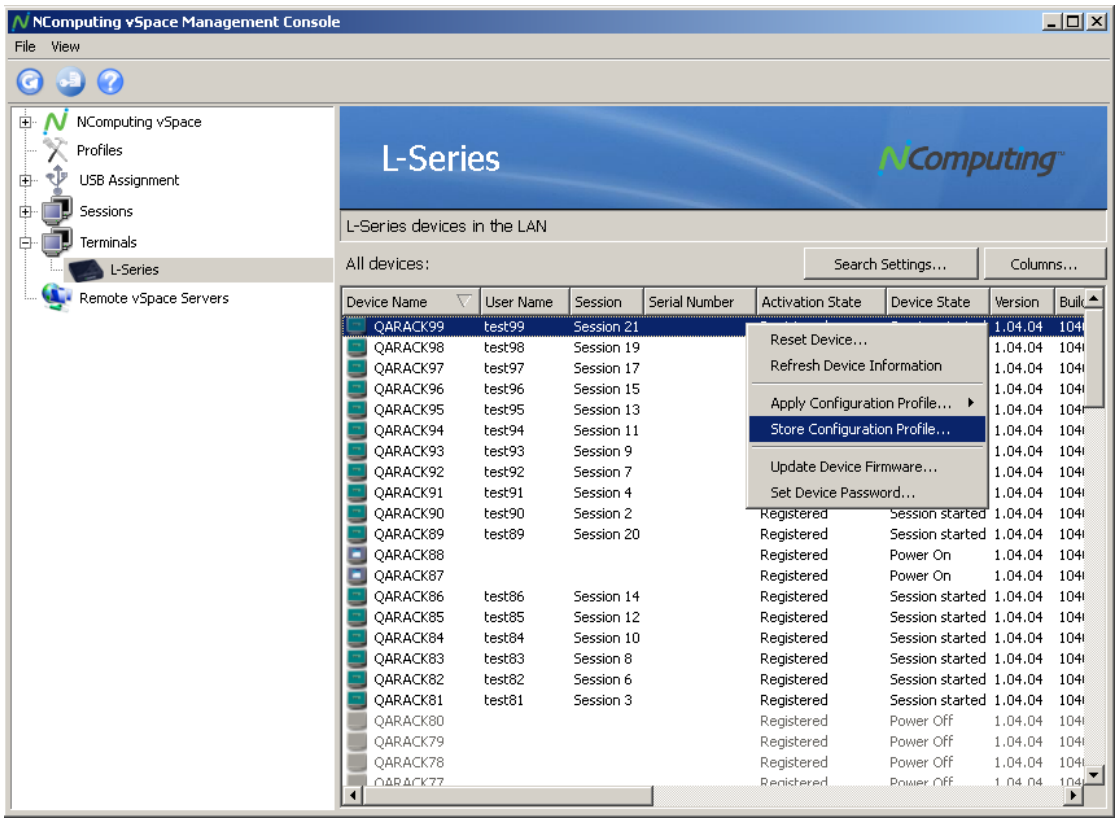
The Select L/M-series Device List Columns dialog box provides an extensive list of device details that can be toggled on or off as desired to create a custom display within the L/M-series device list. These choices affect which columns are displayed in the L/M-series Devices field to the right of the vSpace management console.

5.11 Configuration Profiles

As of vSpace version **L-6.5.1.,** the NComputing vSpace Console includes the ability to save L-series device settings and apply those settings to other L-series devices across the network. While administrators retain the option to fine-tune devices on an individual basis, the Profile Management feature adds the ability to design and then deploy pre-selected configuration profiles to groups of devices in one step.

5.12 Creating Profiles

Profiles can be created by right-clicking on a device in the L/M-series Devices list and selecting the "Store Configuration Profile" option from the pop-up menu that displays, as shown below:

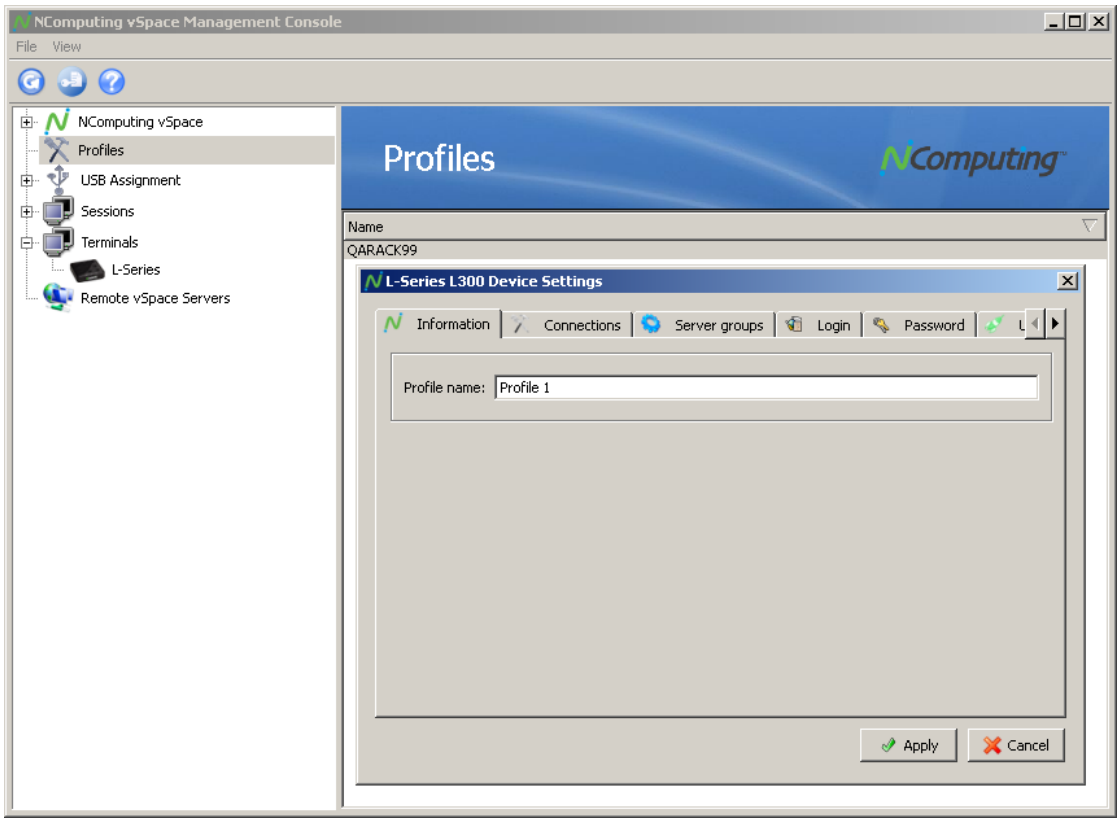


After choosing to store the selected profile, a confirmation will appear. Select "Yes" from the confirmation dialog box to store the profile in the "Profiles" section of the vSpace Management Console. The Management Console can store multiple profiles, and you can edit or remove them at any time.

5.13 Editing Profiles

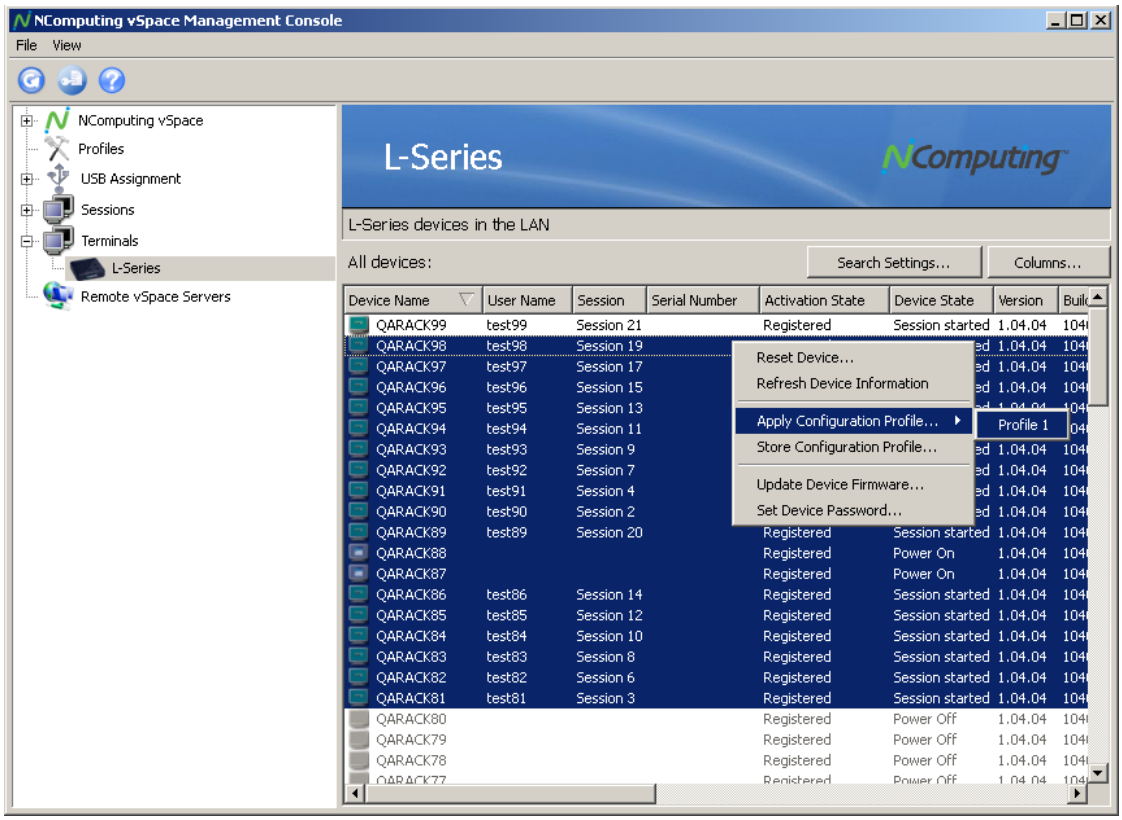
Once a profile is created, administrators can edit the profile in the same way they would apply changes to the settings of an individual device. To do this, select “Profiles” from the left navigation tree within the Management Console, and then right-click on a profile, as shown below:

Once you have selected a profile to edit, you will be presented with a multi-tabbed configuration menu that closely resembles the device configuration menu. This menu allows you to rename the selected profile, as well as alter Connection, Server Group, Login, Password and Firmware Update settings, as shown below:



5.14 Applying Profiles

To apply a saved profile to other devices, select one or more L/M-series devices within the L or M-series Device list and then right-click on any of the selected devices. From the pop-up menu that displays, select “Apply Configuration Profile,” as shown below:



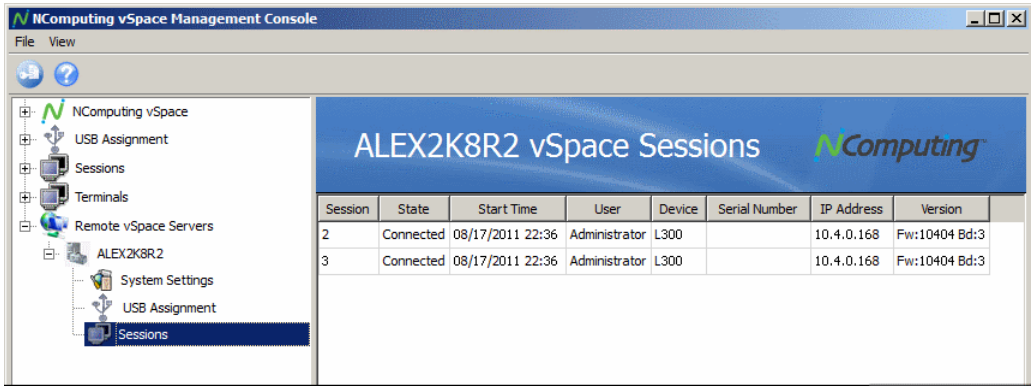
After confirming the action, the Management Console will begin updating the selected devices. This process may take a few moments, depending on the number of devices affected by the update. Once the process is complete, the affected device(s) will reboot automatically.

Keep in mind that L and M-series device profiles are not cross compatible due in part to the fact that L-series stores information for three separate devices/users per kit as compared to the L-series' single device/user. For this reason Profiles must be created for and applied to L and M-series devices separately.

> **NOTE:** If a device has a password applied to it, you will be prompted to enter the password when attempting to apply a profile to that device.

6.0 Remote vSpace Servers

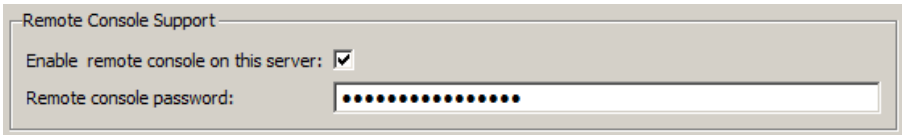
The “Remote vSpace Servers” section of the console allows administrators with multiple host systems on a given network to view and manage multiple hosts from one location. Additional features include the ability to view a given remote server’s active sessions and USB port assignments.



When one or more vSpace hosts have been configured for Remote Console support, they appear under the “Remote vSpace Servers” section of the vSpace console’s left navigation tree. Select this section of the navigation tree to display available hosts to the right of the console; click the “+” sign to expand the navigation tree and display the individual servers as sub groups. Click on the “+” sign next to each server to display all available remote settings and configuration menus.

6.1 Enabling Remote Console Support

To allow a given host to be accessed remotely by other hosts, enable the Remote Console Support feature in the System Settings menu under the “L-series” tab (**2.3 System Settings**). To do this, select the “Enable remote console on this server” checkbox and enter a password, as shown in the image below:



6.2 Remote Console Features

While many of the host management features can be accessed remotely, there are some differences between what can be accessed remotely (from a different vSpace host on the same or different subnet) and what can be accessed locally (from the Management Console running on the host to which devices are connected). Below is a feature matrix demonstrating some of these differences.

		Available Locally	Available Remotely (same subnet)	Available Remotely (cross subnet)
System Settings	View	✓	✓	
	Edit	✓	✓	
USB Assignment	View	✓	✓	
	Edit	✓		
Connected Sessions	View	✓	✓	
	Edit	✓		
Device Settings	View	✓		✓
	Edit	✓		✓

While keeping the limitations listed above in mind, features available through the remote console function in much the same way they would locally. Below is a brief overview of each subsection available for each remote server.

Server and Licensing Information — Click on the server name within the left navigation tree to display a mix of vSpace and Licensing information for that server (as described in **sections 2.1 and 2.2** of this guide).

System Settings — Provides a selection of host configuration options (as described in **section 2.3** of this guide).

Sessions — Displays a list of currently active sessions on the selected host. Unlike the local Sessions list, you cannot directly interact with sessions viewed through the "Remote Servers" section of the vSpace console.

7.0 Common Tasks

This section provides some examples of frequently-encountered administrative tasks that utilize many of the features outlined in the previous sections.

7.1 Helpdesk Tasks - Remote Viewing and Controlling a Device Session

For this example, we'll simulate remotely viewing and then controlling an active vSpace session. These actions will demonstrate the following vSpace console features:

- Locating sessions by windows login credentials
- Viewing a session remotely
- Controlling a session remotely

The Scenario:

A device user is having trouble and has called their office helpdesk service to assist them. The nature of the issue suggests that the easiest solution may be to **have a technician take over their session remotely and perform a few troubleshooting tasks**. In this scenario, the user doesn't know what their device name is but provides the Windows Login Name that they used to log in to Windows. They've connected to the **Sales1 server,** which is one of many virtual machines hosted within the office.

Step 1 – Open the vSpace Management Console:

The technician logs into the Sales1 server (using the virtual machine's console application, such as VMWare's vSphere Client). Once logged into the server, the technician launches the NComputing vSpace Management Console. (If this host were on a "bare metal" system, they could just as easily have opened an RDP session or, if the host were located in their part of the office, they could simply go to the host itself and log in to the host using an admin account.)

Step 2 – Determine which session is being used by the device in question:

Under the "L-series" section of the vSpace console, the technician would then locate the device by searching for the Windows Login Name provided under the "User Name" column of the L-series device list (outlined in **5.1 L-series** of this guide). Click at the top of any column to allow them to sort by this column to quickly find the user in question. In this scenario, we'll assume it was Session 2.

Step 3 – Use the Session Controls to perform the desired helpdesk tasks:

The technician would then open the "Sessions" section of the console (**4.1 Session Overview and 4.2** Session Information) and left-click on Session 2 in the left navigation tree, revealing several session control options (**4.3 Session Controls**) along the top of the screen. These controls allow them to remotely view and then control the desired user session.

7.2 Maintenance Tasks - Performing a Firmware Update on an Active Device

In this example, we will simulate performing a firmware update on a device that is currently in use. To do this we need to give the current user advanced notice of the impending update before proceeding. This demonstrates the use of the following vSpace console features:

- Locate devices by active session ID
- Send a message to an active session via the console
- Perform a remote firmware update on multiple devices simultaneously

The Scenario:

As the work day winds down in a small office environment, the administrator gets ready to perform firmware updates on L-series devices throughout the building. All of the users have left for the day, with the exception of one. The administrator needs to make sure that the user is aware of the impending device update and restart before proceeding and decides to use the vSpace Management Console to accomplish this task.

Step 1 – Locate the active session and its associated device.

The administrator locates the active session using the "Sessions" section of the Management Console (**4.1 Session Overview** of this guide). If there were more than one user still active, they would all be visible in this list.

Step 2 – Send a message to the active session warning of the impending update.

By selecting the active session(s) found in the "Sessions" list and using the "Send Message" button (**4.3 Session Controls** of this guide), the administrator is able to send a text alert to the remaining user warning the user of the impending firmware update and forced device restart. This gives the user enough time to save their work and log out.

Step 3 – Perform a remote firmware update on all selected devices.

Once the remaining user has closed out their session, the administrator is free to select all of the devices in need of a firmware update in the L-series Devices list and perform a firmware update via the right-click menu (**5.1 L-series** of this guide).

7.3 Deployment Tasks – Installing and Configuring a new Computer Lab

For this example, we will go through the steps of initially deploying a series of devices, verifying their connectivity and performing some initial configuration tasks. These actions demonstrate the use of the following vSpace console features:

- Performing a firmware update on multiple devices simultaneously
- Storing and applying a device profile to multiple devices simultaneously

The Scenario:

A school is adding a lab with an additional 20-devices to their existing NComputing deployment. To expedite the deployment process, they will perform as many tasks as they can from the host rather than configuring individual devices.

Step 1 – Connect and Configure the First Device

After creating a host system with sufficient hardware resources for the intended user load, and completing the vSpace installation and registration process outlined in **1.1 Installing vSpace** and **1.2 Registering vSpace** of this guide, the administrator connects the first device to the host created for this lab. This device will serve as the template for the rest of the devices in the lab.

Once connected, the administrator locates the device from the host under the L-series Device list (**5.1 L-series** of this guide). The administrator right-clicks on the device and then selects "Update Device Firmware" to initiate a firmware update on the selected device. Once that process is complete and the device reboots, the administrator can double-click on the device and configure it as desired (**5.3 Information Tab through 5.9 Update Tab** of this guide).

Step 2 – Store the First Device's Configuration Profile

After completing the configuration process on the selected device, the administrator can then right-click on the device in the L-series Devices list of the console and select "Store Configuration Profile" (**5.12 Creating Profiles** of this guide) to save this configuration for use on the rest of the devices in the lab.

Step 3 – Connect and Configure the Remaining Devices

It is now time to connect the remaining devices. Once the devices are connected, the administrator can perform a firmware update on all of them simultaneously by selecting the group and initiating a firmware update as outlined in **Step 3**.

Once the devices have completed their firmware update, the administrator can then apply the first device's Configuration Profile to the remaining group in one step by again right-clicking on the group and selecting "Apply Configuration Profile" (as described in **5.14 Applying Profiles** of this guide).